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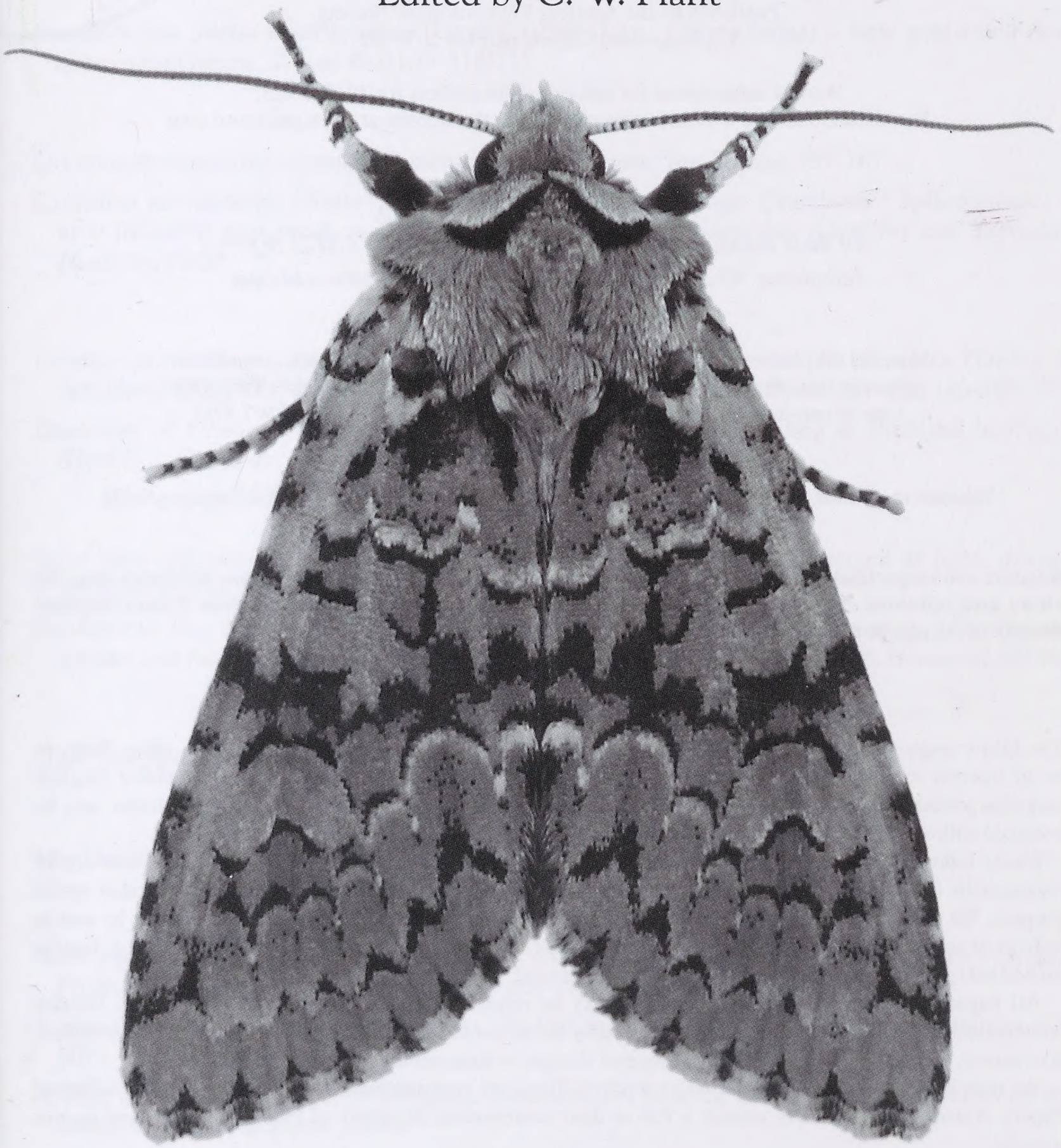
and Journal of Variation

Edited by C. W. Plant



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Front cover image of *Dichonia aprilina* (L.) from photograph © by John B. Murray

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Front cover image of *D. aprilina* Marshalls Heath Herts 16 June 2006. © John B. Murray

PHYLLONORYCTER PASTORELLA (ZELLER, 1846) (LEP.: GRACILLARIIDAE) IN LONDON: A SPECIES NEW TO BRITAIN

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Abstract

Phyllonorycter pastorella (Zeller, 1846) (Lep.: Gracillariidae), is added to the British list of Lepidoptera from leaf mines and pupal material found on narrow-leaved willows (*Salix* spp.) at four sites in central London in October and November 2014.

Introduction

On 19 October 2014, whilst surveying leaf-mining Lepidoptera in Buckingham Palace Garden, London (Middlesex, VC 21), I found an unusually large *Phyllonorycter* mine on the underside of a leaf of Weeping Willow *Salix* × *sepulcralis* var. *chrysocoma*. My attention was also caught by the presence of a distinct longitudinal crease along the mine's lower surface. A pupal exuviae was protruding through the lower epidermis indicating that an adult had emerged. The leaf was collected and the tree further searched, but only a few mines of *Stigmella obliquella* (von Heinemann, 1862) were found.

On closer inspection the mine measured 28 × 4 mm and occupied a rectangular space between the midrib and the leaf-edge. The upper surface was slightly arched and virtually all the palisade parenchyma had been eaten. The lower surface was smooth and pinkish brown. The pupal exuviae was removed and examined under high-power magnification. The relatively large, blackish and partially glossy exuviae with pronounced venation on the wing cases, long setae and an orange-brown cremaster bearing two pairs of tiny outward-pointing hooks was unfamiliar. The combination of hostplant with mine and exuviae morphology did not equate with that of any known British species. However information on three European Lepidoptera websites *www.bladmineerders.nl*, *www.lepiforum.de* and *www.bladmineerders.be*, as well as the descriptions in Bengtsson & Johansson (2011) were conclusive in identifying it as *Phyllonorycter pastorella*, a species which regularly uses narrow-leaved willows. Photographs and details were emailed to John Langmaid who confirmed this determination.

Buckingham Palace Garden was visited again on 26 October 2014. After three and a half hours of careful searching, a group of six mines was located amongst dense foliage of two large Weeping Willows at the southern end of the lake. Adults had emerged from three of these (two had pupal exuviae still attached); two were fresh and parasitised, and one was fresh and appeared to contain a viable pupa (Plates 1, 7). Since *P. pastorella* overwinters as an adult I tried beating surrounding foliage for the moth but without success.

The following day (27 October 2014), I visited The Regent's Park (also in VC 21) to examine willows growing around the Boating Lake and associated wetland areas.

Plate 1. Leaf mines of *Phyllonorycter pastorella,* on *Salix* × *sepulcralis chrysocoma*, Buckingham Palace Garden, 26.x.2014.

Plate 2. Lakeside habitat of *Phyllonorycter pastorella*, Battersea Park, London, 19.xi.2014.

Although time was limited, a cluster of mines was eventually discovered on two large Weeping Willows. From seven mines found here adults had emerged from three (one still had a pupal exuviae intact) and four had been parasitised (of which two were fresh and contained remains of larvae).

I was unable to survey any more sites until 4 November 2014 when a brief visit was made to St James's Park (VC 21). Searching around the northern half of the lake I found two parasitised mines on Weeping Willow; one mine was old and the other contained remains of a larva. A third mine from which an adult had emerged was discovered on Hybrid Crack-willow *S.* x *fragilis*. This was on a largish leaf (15.6 × 2.3 cm) and had a more oval shape than others previously found. The following day (5 November) I made a brief visit to Kensington Gardens and Hyde Park (also in VC 21), examining leaves on a few weeping willows and some other *Salix* spp. growing beside The Long Water and The Serpentine. However *P. pastorella* was not found.

Finally, Battersea Park (Surrey, VC 17) was visited on 19 November. Extensive searching around the boating lake produced three parasitised mines on the remnants of an old Weeping Willow (Plate 2). A large Hybrid Crack-willow near the same spot only yielded mines of *Stigmella obliquella*. Grounds staff directed me to two more weeping willows situated within enclosures at the southern end of the Festival Lake. Fourteen mines of *P. pastorella* were collected here: adults had emerged from five (one had a pupal exuviae attached); one had been predated by a bird, and eight had been parasitised. One leaf had two mines on it. Nine of these mines were noticeably shorter than those from Buckingham Palace Garden and The Regent's Park, being between 12 and 18 mm in length, a fact which seemed to equate with the Battersea Park leaves being slightly larger and thus less restrictive. A search on three tall Crack Willow, *S. euxina* growing nearby produced four more mines. An adult had emerged from one of these. With the onset of dusk I made for the exit by Albert Bridge. Near this point a fine weeping willow (thought to be Weeping Crack-willow *S.* × *pendulina*) grows beside the River Thames. Three fresh mines were collected here; one had a pupal exuviae attached and two were parasitised.

To summarise: a total of 37 mines, including one viable pupa (subsequently died) and six exuviae, were found at four sites in central London in October and November 2014. All pupal cremasters were examined microscopically. Approximately 70% of the mines appeared to have been parasitised.

Taxonomy

***Phyllonorycter pastorella* (Zeller, 1846)**

= *Lithocolletis pastorella* Zeller, 1846, Die Arten der Blattminiergattung *Lithocolletis*. *Linnaea Ent.* **1**: 250

= *Lithocolletis fainae* Gerasimov, 1931, Zur Lepidopteren-fauna von Mittelasien III. Neue Lithocolletis. *Entomologische Zeitschrift Frankf. am M.* **45** (9): 128-130.
Type locality - Uzbekistan: Khiva, Novyi Urgench.

Plate 3. *Phyllonorycter pastorella* adult ex pupa; leaf mine on narrow-leaved *Salix* sp. Mol-Antwerpen, 29.ix.2013. Photo: Carina Van Steenwinkel.

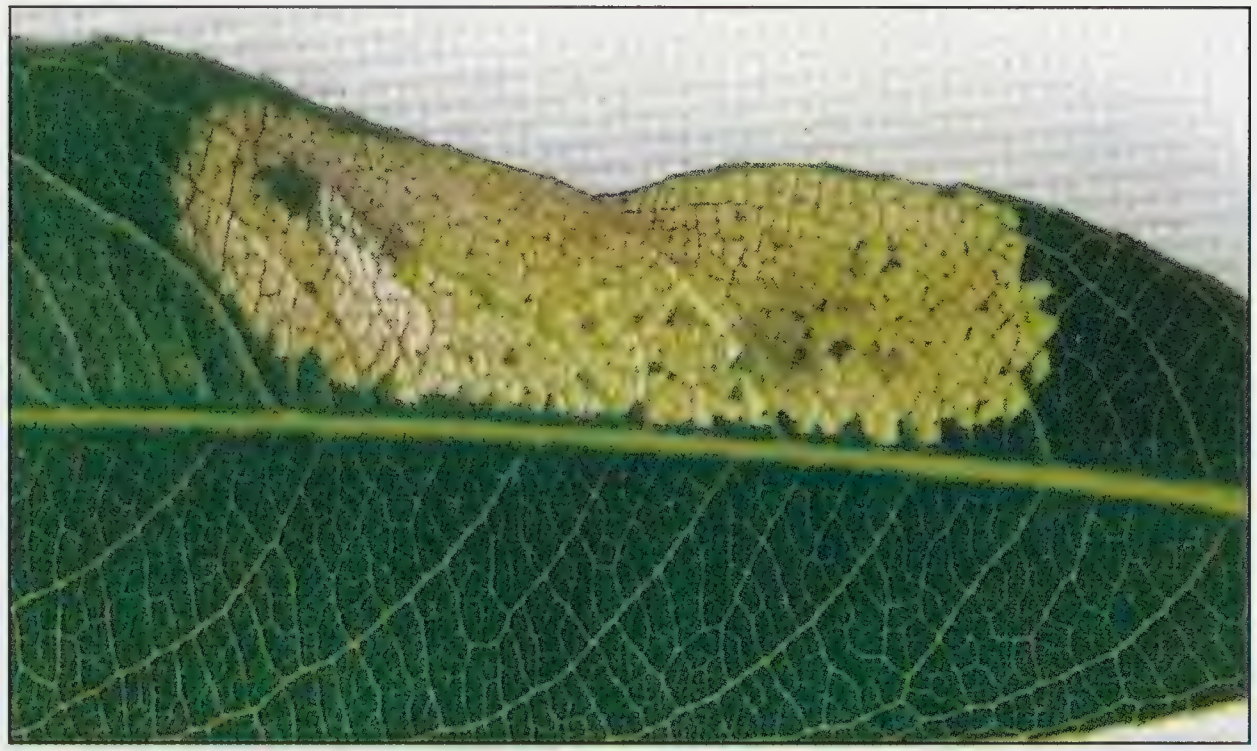

Plate 4. Upper surface of leaf mine of *Phyllonorycter pastorella* on *Salix* × *pendulina*, Battersea Park, London, 19.xi.2014.

Plate 5. Lower surface of leaf mine of *Phyllonorycter pastorella* on *Salix* × *sepulcralis chrysocoma,* Buckingham Palace Garden, 26.x.2014. Note the elongated mine and protruding pupal exuviae.

Plate 6. Lower surface of leaf mine of *Phyllonorycter pastorella* on *Salix* × *fragilis,* Battersea Park, London, 19.xi.2014. Note foreshortened mine, oval lump of frass and protruding pupal exuviae.

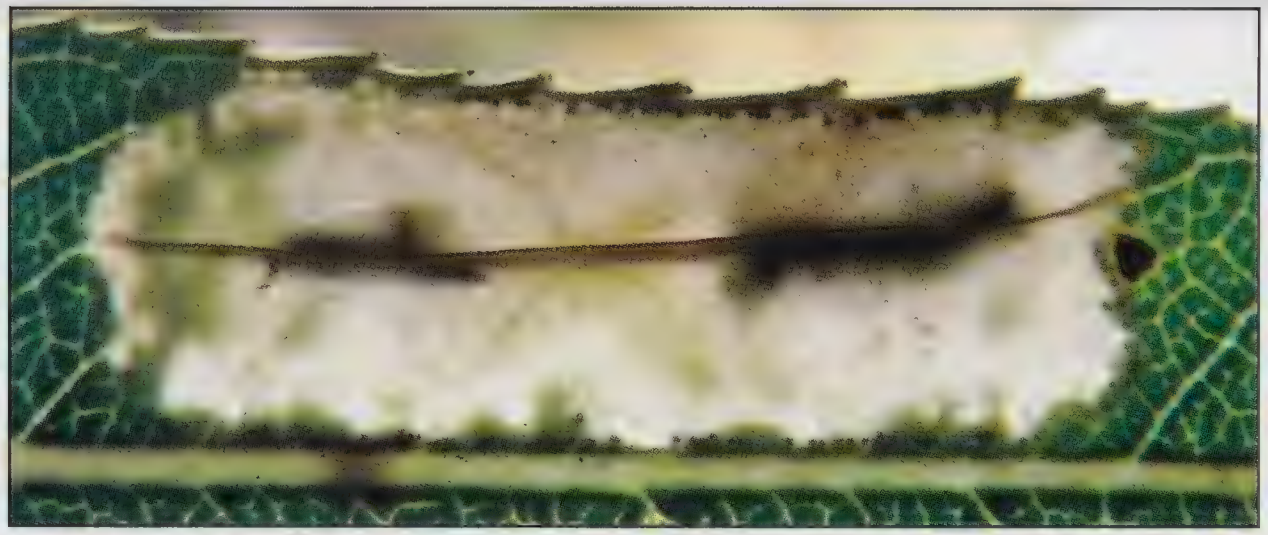

Plate 7. Viable mine of *Phyllonorycter pastorella*, with lower epidermis intact. Buckingham Palace Garden, 26.x.2014.

Plate 8. The same mine as shown in Plate 7 with lower epidermis removed revealing pupa in flimsy,oval white cocoon; frass in cigar-shaped lump.

Plate 9. Pupa of *Phyllonorycte pastorella* - ventral view. Note pronounced wing venation. Details as for Plate7.

Plate 10. Pupa of *Phyllonorycte pastorella* – lateral view. Note long abdominal setae. Details as for Plate 7.

Plate 11. Pupa of *Phyllonorycter pastorella* – dorsal view. Note yellow-brown cremaster; hooks barely discernable. Details as for Plate 7.

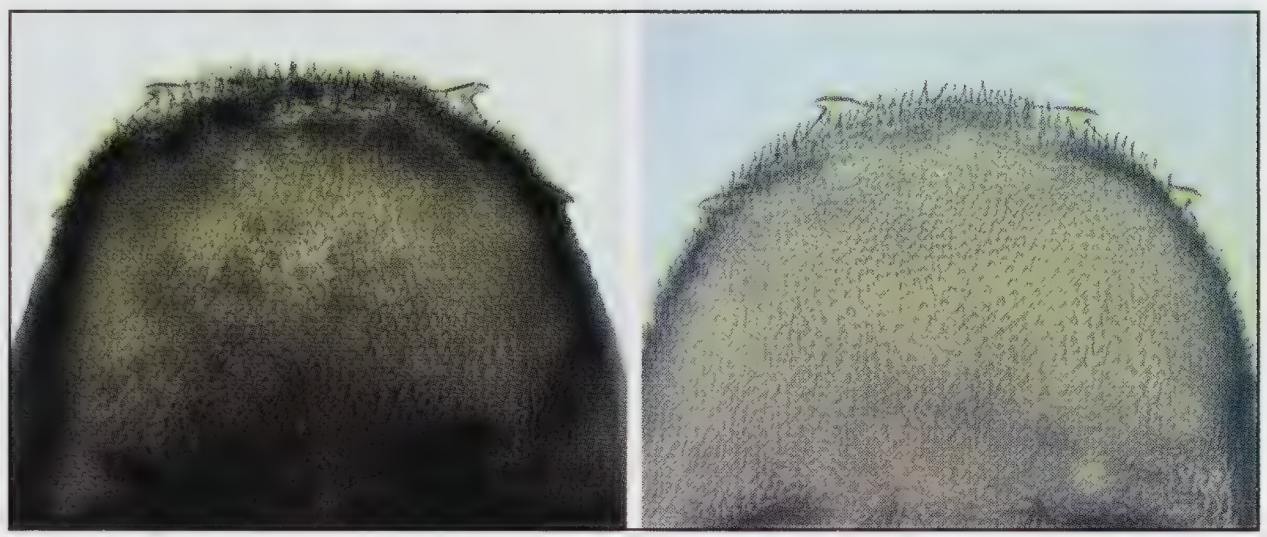

Plate 12. *Phyllonorycter pastorella*- cremasters seen under high power magnification. Note the two pairs of tiny outward pointing hooks. Prepared from exuviae collected in London 2014.

The British checklist

In the new British checklist *Phyllonorycter pastorella* (Zeller, 1846) should be inserted between 15.083 *P. trifasciella* (Haworth, 1828) and 15.084 *P. acerifoliella* (Zeller, 1839). For the benefit of computerized recording systems that currently retain the Bradley & Fletcher (1979) numbering system, the number 316a is appropriate.

Biology

Hostplants

Phyllonorycter pastorella is found in damp habitats frequently beside lakes where its hostplants, poplars (*Populus* spp.) and willows (*Salix* spp.) grow, trees being preferred to smaller shrubs (Hering: 1957: 922; Bengtsson & Johansson, 2011: 210-211). In London, mines were predominantly found on Weeping Willow *Salix* x *sepulcralis chrysocoma*, and Weeping Crack-willow *S.* × *pendulina* and to a lesser extent on Crack Willow *S. euxina* (*S. fragilis* auct. non L.) and Hybrid Crack-willow *S.* × *fragilis*. [N.B. Burton (1983: 106) considered that in London most weeping willows are *Salix* x *sepulcralis* and *S.* × *blanda* (now *S.* × *pendulina*), the respective hybrids of *S. babylonica* with *S. alba*, and *S. babylonica* with *S. fragilis* (now *S. euxina*)]. In Europe predominantly on narrow-leaved willows especially Weeping Willow; Crack Willow; White Willow, *S. alba*, and Bay Willow, *S. pentandra* (Bengtsson & Johansson, 2011; Ellis, 2014a). The use of poplar and aspen is apparently less frequent. Worldwide, De Prins & De Prins (2014) name 26 species of Salicaceae.

Description of mine and cocoon

Most Continental authors agree that mines are to be found in the autumn (see **Phenology** below). From observations made of 37 mines collected in October and November in London it appears that the female usually lays one ovum (occasionally two) on the underside of a leaf. One leaf had two mines present (one either side of the midrib); all other mines occurred singly. The large, lower-surface tentiform mine has one distinctive, often curving, longitudinal crease. On very narrow leaves, e.g. weeping willows, entire space between midrib and leaf-edge is occupied and mine can be significantly elongated (20-28 mm) (Plates 4, 5). On broader leaves, e.g. Crack Willow and its hybrids, the mine is oval or square and subsequently shorter (12-18 mm long) (Plate 6). In viable mines almost all palisade parenchyma is eaten (Plate 4). The lower epidermis is creamy-green when fresh becoming pinkish-brown with age. Parasitised and developing mines may be smaller and their upper surface mottled green. Larvae and pupae are subject to predation and parasitic attack (see De Prins & De Prins [2014], who list 11 parasitoids). Approximately 70% of collected mines in London had been parasitised. The frass is deposited in a clump in the part closest to the leaf-tip and the pupa, which lies in a flimsy white cocoon, occurs in the part closest to petiole (Plates 7, 8). In elongated mines the clump of frass is usually cigar-shaped, but in shorter mines it may be egg-shaped. The mine is identical in appearance to that of *P. connexella* (Zeller, 1846) (not yet recorded in Britain), which is also found on

narrow-leaved willows (Bengtsson & Johansson, 2011: 210). However this species overwinters as a pupa and creates a more substantial cocoon with frass being laid down along the sides giving an impression of two dark lines when held against the light (Ellis, 2014b; see also Hering, 1957: 922).

Pupa

Pupa is relatively large, blackish-brown and partially glossy (Plates 9, 10, 11). Collected material measured 4 mm long; Gregor & Patočka (2001) give 4-5.2 mm. Venation on wing cases is pronounced and dorsal setae on abdominal segments are long. Cremaster is rounded and has two pairs of tiny, outward pointing hooks situated on the caudal margin (Plate 12). Cremaster colour varies from orange-brown to yellow-brown. The use of Salicaceae for hostplant and the presence of reduced cremastral hooks are characteristic of a congeneric group whose adults have somewhat similar appearance: *Phyllonorycter connexella*, *P. populifoliella* (Treitschke, 1833), *P. pastorella*, *P. sagitella* (Bjerkander, 1790), *P. apparella* (Herrich-Schäffer, 1855), and *P. comparella* (Duponchel, 1843) . Until now only *P. sagitella* and *P. comparella* have been found in Britain. All except *P. connexella* are predominantly poplar and/or aspen feeders. Since *P. pastorella* can also use these hostplants, careful examination of the cremaster in conjunction with the mine is therefore recommended. Breeding through to adult and dissecting the genitalia may be essential for correct determination in some cases. For comparisons between these species see Gregor & Patočka (2001) and Patočka & Turčáni (2005) which give detailed descriptions and illustrations of pupal morphology.

Adult

The adult overwinters (Gregor & Patočka, 2001: 39). From description given in Bengtsson & Johansson (2011: 211): wingspan 7-8.5 mm. Crown ivory with scattered brown scales anteriorly. Face white. Basic colour of forewing typically greyish orange, but ranging from fuscous to brownish orange. Two to four costal and two to four dorsal spots; whitish to beige or similar to basic colour, usually dark-edged along inner margin. Plate 3, shows an adult which emerged from a mine collected on narrow-leaved *Salix* sp. in Mol-Antwerpen, Belgium, by Carina Van Steenwinkel.

Phenology

At the moment, because this species has just been discovered in Britain, it is unknown whether there is more than one generation a year in this country. Continental authors seem to give conflicting accounts as to whether it is univoltine or bivoltine: Hering (1957: 922) states that mines are found in August and September; concerning subspecies *fainae,* which occurs further east, he states mines occur on poplar in June and July. Bradley *et al* (1969: 30) give August and then September-October for the mine, and May and July for the adult. Gregor & Patočka (2001: 38-39) state that *P. pastorella* is bivoltine and overwinters as an adult. Bengtsson & Johansson (2011: 210-211) state that in Sweden the species is univoltine, the adult flying from late July to early September. For further clarification I contacted Carina Van Steenwinkel

(Flemish Entomological Society) for her observations from Mol-Antwerpen, Belgium. These are very well illustrated with photographs of the adult, larva, mine and pupa on the www.bladmineerders.be website. In 2012 and 2013 Carina collected mines in September which produced adults later that month. In October 2013 and 2014 she collected mines and photographed larvae although these were not bred through. The earliest she has found mines is late August. Up to 60-70% of the mines she collected were parasitised.

With reference to mines collected in London, some were distinctly old whilst others were very fresh, possibly indicating two autumnal generations.

Distribution

Described from Uzbekistan. Throughout Europe, excluding Greece, and the Mediterranean islands, Portugal, Denmark, Norway and Croatia (Karsholt & van Nieukerken, 2014). Europe from the following: Austria, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Czech Republic, Estonia, Finland, France, Germany, Hungary, Italy, Latvia, Lithuania, Macedonia, Netherlands, Poland, Romania, Russia, Slovakia, Spain, Sweden, Switzerland, Ukraine. Beyond Europe: China, Japan, Kazakhstan, Korea, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan (De Prins & De Prins, 2014).

Discussion

The distribution and number of mines found in London suggest that *P. pastorella* has been in the capital for at least a year prior to its discovery. If it invaded by immigration it may already be established in eastern London and beyond although this region has not been searched by the author. Recent observations in Belgium and the Netherlands note that *P. pastorella* is expanding its range together with some other Salicaceae feeding *Phyllonorycter* (Ellis, 2014a; Wullaert, 2014). In London, mines were most numerous in Battersea Park and The Regent's Park and scarce in St James's Park and Buckingham Palace Garden. Annual surveys carried out in the Garden since 2006 incorporate leaf mine sampling in addition to regular light trapping sessions (Freed, 2007-2015). The Garden's Weeping Willows are investigated each autumn and yield *Stigmella obliquella* and *Caloptilia stigmatella* (Fabricius, 1781), and occasionally *Phyllonorycter viminiella* (Sircom, 1848) [*salictella* sensu auctt. nec Zeller, 1846], first recorded here in 2008. *Phyllocnistis saligna* (Zeller, 1839) was recorded here for the first time in 2012 as an adult at light. It is also of interest that the Garden has been the source of four other new additions to the British moth list: *Monochroa hornigi* (Staudinger, 1883) (Gelechiidae) in 1963, Spiny Bollworm *Earias biplaga* (Walker, 1866) (Nolidae) in 1964, *Eccopisa effractella* Zeller, 1848 (Pyralidae) in 1995 and *Ectoedemia heringella* (Mariani, 1939) (Nepticulidae) in 2001 (Carter, 2001; Honey, 2002).

Attempts to discover if *P. pastorella* arrived in London via the international horticultural trade have been inconclusive. A variety of willows including *Salix alba* 'Tristis' have been planted in Buckingham Palace Garden in recent years. These trees

were sourced from a number of specialist British nurseries. Narrow-leaved willows have been planted recently in the Central Royal Parks, the source of these being Barcham Trees (Ely) who carry out rigorous bio-security measures prior to sale and distribution of stock. However it is still possible for landscape contractors, architects and garden centres to bypass British nurseries and buy directly from the Continent where bio-security remains very lax (Mike Glover pers. comm.). Some recently planted ornamental willows were also noted in Battersea Park although the source of these has not been investigated.

Parsons (2003; 2010) concluded that the majority of Lepidoptera which have recently colonised Britain have arrived here naturally through primary immigration, and that climatic factors were strongly suspected of having a major influence in this process. He also drew attention to the steady increase in the rate of accidental introduction and subsequent establishment of adventives in Britain, particularly in south-east and southern England in the three decades leading up to 2009. Assuming that *P. pastorella* becomes established in Britain, it will be interesting to follow its rate of dispersal. This is likely to follow watercourses where its hostplants are well established. Factors affecting the colonisation and subsequent dispersal of congeneric species *P. leucographella* and *P. platani*, first recorded in Britain from south-east England in 1989 and 1990 respectively, are described by Agassiz (1996: 23-26).

Acknowledgements

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DISCOVERY OF *ETHMIA PYRAUSTA* (PALLAS, 1771) (LEP.: ETHMIIDAE) BREEDING IN HIGHLAND SCOTLAND

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Abstract

An account is given of the discovery and biology of the larva of *Ethmia pyrausta* (Pallas) in the Scottish Highlands. The foodplant is confirmed as Alpine Meadow-rue *Thalictrum aplinum* L.

Historical status

The history of *Ethmia pyrausta* in Scotland has been well documented. It was first discovered in May 1853 (Buxton, 1866), when a single male was found on the banks of the River Shin in Sutherland. After many unsuccessful attempts to locate it in the Shin valley it was, by chance, rediscovered in 1996 at an altitude of about 1000m on Glas Maol in the Cairngorms (Young and Smith, 1997; Sattler, 1997), when two specimens were found in water traps. A further specimen was then found by KPB on 28 May 2001 resting on a snow bed at 810m, at the head of a feeder burn to Loch Vrotachan on the NNW end of The Cairnwell, Aberdeenshire. Further single specimens were subsequently found caught in a spider's web near Loch Morie, Easter Ross by M Currie and A Scott (Young, Currie and Scott, 2009) in May 2008, and at 330m by G Matthews on the slopes of Ben Griam Mor, Sutherland, in May 2012.

The 2014 discovery

On 24 April 2014, NGJR was looking for Emperor moths *Saturnia pavonia* (L.) on Croick Estate and the surrounding hills at the western end of Strathcarron (in the Watsonian vice-county of Easter Ross, VC106), when a single female *E. pyrausta* (Plate 1) was noticed resting on vegetation in a wet grassy flush on the south-facing slopes of Meall Dheirgidh (Plate 2) at an altitude of about 350m. After searching the surrounding area, a further (unsexed) specimen was found resting on short grass within 100m of the initial female. Heavy rain then prevented further worthwhile searching.

NGJR returned to the same site on 28 April in dry, sunny conditions, when a further eleven *E. pyrausta* were found over an area about 500m wide at the same altitude. Two were seen to be females, one was a male and the remainder were left unsexed. The adult moths were most often found resting on vegetation, showing a reluctance to fly, although they were also noted taking short flights before dropping back to the ground.

It was then decided to search for larvae and so further visits were made by NGJR on 13 May and 31 May. No larvae were found on those visits but a further two adults, both quite worn and faded, were found in the same area on the latter date.

Plate 1. *Ethmia pyrausta* female found in April 2014 on Meall Dheirgidh.

Plate 2. General view of the south-facing slopes of Meall Dheirgidh during 2014.

Plate 3. *Ethmia pyrausta* last instar larva 14mm long, originally found in the grassy flush shown in Plate 4.

Plate 4. Close up view of the wet grassy flush where adult and larval *Ethmia pyrausta* were found in April and May 2014.

Initial discovery of larvae

Young & Smith (1997) and Young, Currie & Scott (2009) both speculate that the likely larval food plant of *E. pyrausta* in the UK is Alpine Meadow-rue *Thalictrum alpinum* L. which was found growing, albeit newly emergent, on 28 April in the wet, grass flushes where the adult moths were discovered. (Plate 4) This prompted NGJR to collect a clump of *T. alpinum* (mixed with grasses, *Potentilla erecta* L. and other plants) on 31 May, as a food source for any larvae that might subsequently be found. This was placed in a tub and kept indoors.

On 18 June, NGJR was looking into the tub when two larvae were noticed, one actively feeding on the leaves of *T. alpinum* and the other resting along a stem. Both were of similar size (approx 11mm), colour and pattern and clearly fitted the general appearance of early instar *Ethmia* larvae. Photos of the larvae were sent to B. Gustafsson of the Swedish Natural History Museum, who believed them to be *E. pyrausta*.

Both larvae disappeared from sight within the tub for around 24 hours on 21 June, but re-appeared on 22 June (along with a third identical larva!) having apparently moulted, as all three were now much darker with brighter yellowy-orange stripes (Plate 3). Measurements were between 12-14mm. Their appearance matched the description of *E. pyrausta* larva in Sattler (2002).

The larger of the three larvae disappeared from view within a couple of days of re-emerging and by 27 June the other two had also disappeared from sight. As they

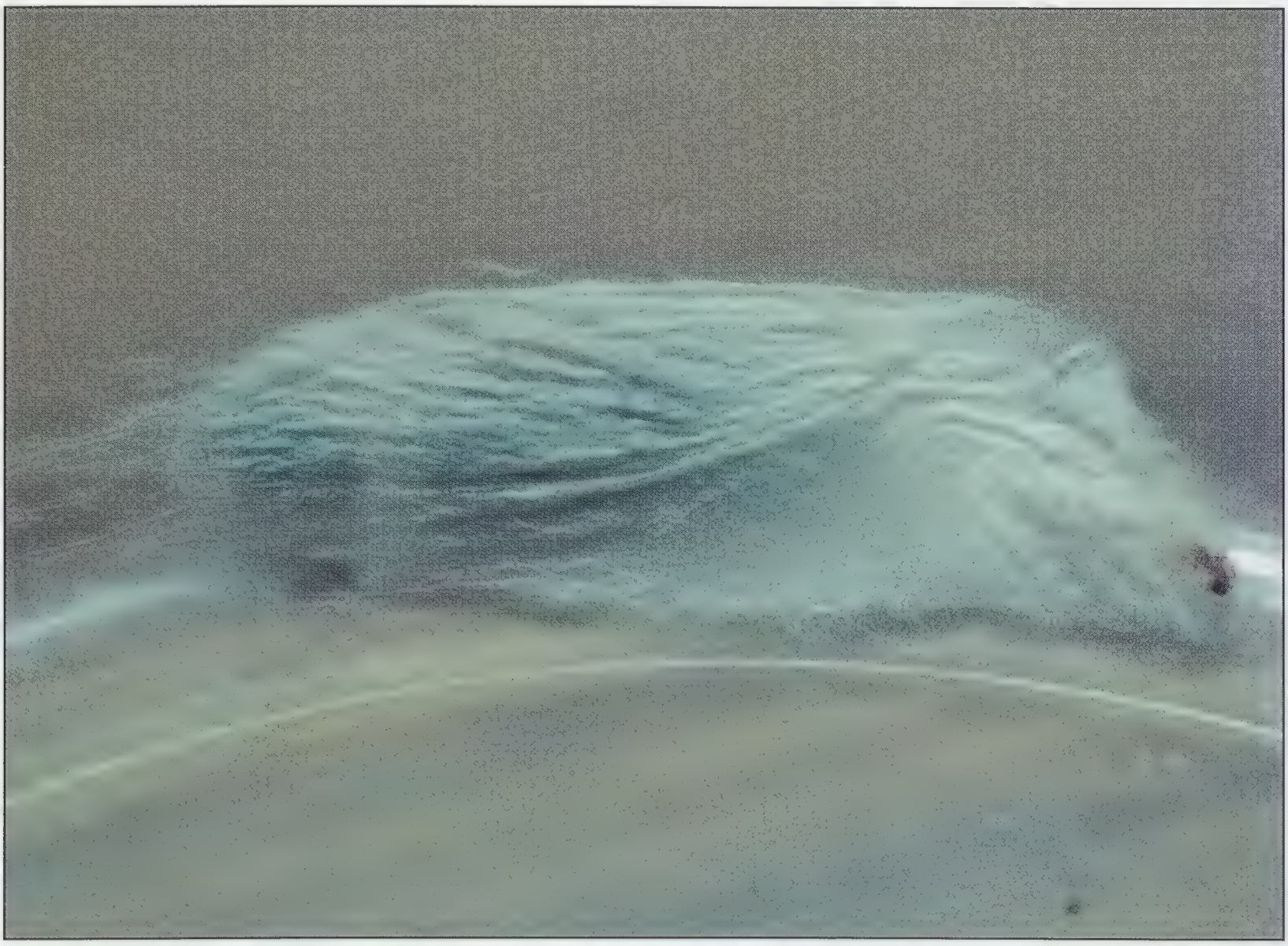

Plate 5. *Ethmia pyrausta*. The white silken cocoon formed by the larvae.

appeared to be healthy, and had been feeding normally, it seems likely all three might have pupated, but the depth of vegetation in the tub prevented obtaining confirmation of this. Time will tell.

During the period the larvae were under observation they lived free and no spinning was noticed. They fed on the *T. alpinum* during the daytime, eating both leaves and the top sections of the stems, but also spent quite long periods simply resting on stems or moving around the vegetation. They were also seen to apparently drink rain water drops from the vegetation. As described in the literature, they would drop off if tapped sharply, but remained attached to the plants, if moved around gently.

Later discovery of larva

On 6 July, MRY accompanied NGJR to the *E. pyrausta* site to look for "wild" larvae. After searching the site for about an hour, NGJR found a single larva (subsequently measured at 11mm) resting on dead grass stems within a clump of *T. alpinum,* close to where the other larvae had originated. This larva resembled the captive larvae and was collected by MRY to rear. It was fed on 'garden' *Thalictrum*, close to *T. aquilegifolium* L., and kept indoors. It fed freely by day and night and grew rapidly, moulting once, whilst clinging onto a silken thread, and reaching 17mm length by 20 July. It then became restless and wandered for over 24 hours before spinning a white silken cocoon amongst dead vegetation stems (Plate 5).

Plate 6. *Ethmia pyrausta*. Early instar larva, 6mm long, found in the Cairngorms in July 2007.

A previous discovery of a larva

These discoveries were not the first encounter with a wild larva. On 21 July 2009, KPB was following up his earlier discovery of an adult at The Cairnwell, by using a vacuum sampler on turf with *T. alpinum* and he captured a single 6mm long larva. This was greyish-white, with an orange-yellow midline streak and lateral blotches, black panicula, pro-thoracic plate and head. The anal plate was brownish and inconspicuous, (Plate 6) (Bland, 2010). This larva moulted in a slight silken web on 23 July, 28/29 July and again on 5/6 August, meanwhile feeding freely on *T. alpinum*. When at rest it also used a slight silken web. By 13 August, still eating well, it had reached 16mm and its colouration exactly matched that shown in Plate 3. Unfortunately, it then became listless and stopped feeding and finally died on 27 August from unknown causes.

Conclusions

Previous studies, summarised by Sattler (1997), suggest that the flight period of adult moths in Estonia is quite short, lasting about two weeks, but varies from year to year between late April and early June, according to the season. The few previous British specimens have been found in May and mid-June. In this latest discovery adult moths were on the wing from at least the last week in April to the end of May.

The discovery of a number of larvae from one small patch of *T. alpinum* suggests that female *E. pyrausta* might lay their eggs in batches. This would fit with such a heavy bodied female moth. It is also now established that in Scotland the larvae do feed on *T. alpinum*, which was previously only assumed might be their food plant.

This latest discovery of at least fifteen adult *E. pyrausta* (and four larvae) confirms they are breeding at the western end of Strathcarron, in the general area of some of the other occurrences and lends support to the speculation that it is widely present in a stretch of country running down the north-eastern Highlands and associated valleys, at least where *T. alpinum* occurs.

Possibly it has remained undetected in the past largely because the adult is out in April and May and is very sedentary, so avoiding most entomologists. Wider searches across other likely areas at the right time of year might shed more light on its true distribution.

Acknowledgements

We would like to thank Croick Estate for their help in providing access to the site and B. Gustafsson for help in confirming the identity of the wild larvae.

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Barkfly *Blaste quadrimaculata* (Latreille) (Pso.: Psocidae) on Leicestershire churches

According to the web site of the National Barkfly Recording Scheme (*www.brc.ac.uk/schemes/barkfly/account.aspx?SpeciesID=6*), *Blaste quadrimaculata* is rare in Britain and uncommon in Ireland. The national distribution map shows less than ten affected ten-kilometre squares, none of them near Leicestershire.

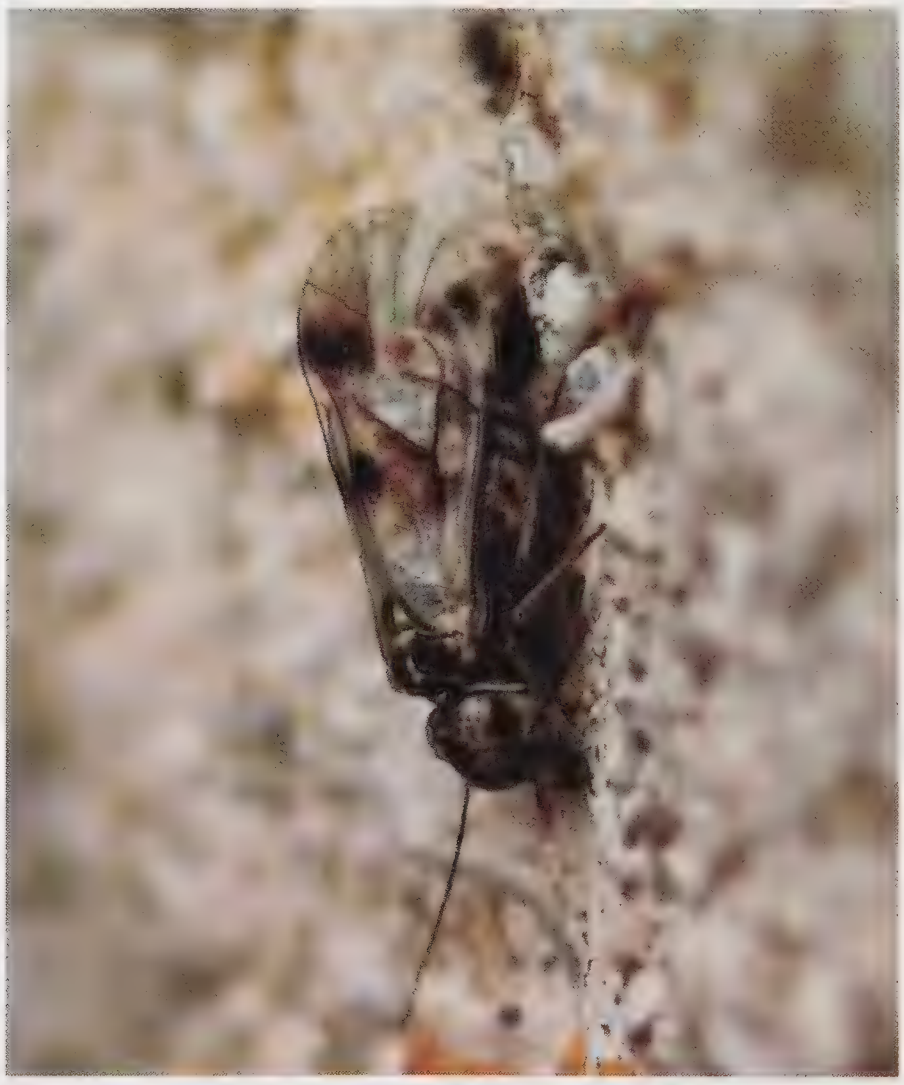

Plate 1. The barkfly *Blaste quadrimaculata* (Latreille) at rest on the wall of a Leicestershire church.

In our survey of approximately 220 Leicestershire & Rutland (VC 55) churchyards, Helen Ikin and myself have found this barkfly ten times, between June and October. We have found it on vertical walls and the sloping masonry below church windows, where lichen cover is sparse. There are usually several together, males and females. On Staunton Harold church, there was a congregation of about 50, on just one part of one wall. They rarely show any activity, they just sit on the wall waiting to be caught.

The identification of captured specimens is straightforward using the on-line key on the Barkfly Recording Scheme web site. We are grateful to Keith Alexander for confirming the first few specimens.

The churches on which we have found *Blaste quadrimaculata* are as follows:

Diseworth SK 453245, 14 Aug 2013; Osgathorpe SK 431195, 14 Aug 2013; Staunton Harold SK 379208, 01 Oct 2013; Croxton Kerrial SK 835295, 21 Jun 2014; Teigh SK 864160, 24 Jun 2014; Croft SP 510959, 29 Jun 2014; Peckleton SK 470008, 29 Jun 2014; Chadwell SK 782246, 15 Jul 2014; Lyddington SP 876969, 3 Oct 2014; Stockerston SP 833975, 3 Oct 2014.

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CYDALIMA PERSPECTALIS (WALKER, 1859) (LEPIDOPTERA: PYRALOIDEA: CRAMBIDAE: SPILOMELINAE) – NEW INVASIVE PEST MOTH IN BULGARIA

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Abstract

Cydalima perspectalis (Walker, 1859) (Lep.: Crambidae) is reported here as a new genus and species for Bulgaria, from three remote localities in disjunct parts of the country. All localities are in urban areas. At one of the localities the new species has become a pest, reproducing and causing serious damage to *Buxus* spp.

Introduction

Cydalima perspectalis has a primarily eastern Asiatic distribution: China, Korea and Japan, but from 2006 was introduced accidentally in Europe where it spreads extremely rapidly on ornamental Box (*Buxus*) communities (Leraut, 2012). It was registered as new for Europe by Billen (2007) in the state of Baden-Wuttemberg (Germany), where the species was probably introduced in 2005. It is reported also as a new for Europe by Kruger (2008). At present in Europe it is known on ornamental box, but not yet on communities of autochthonous box in Germany, the Netherlands, Switzerland, Great Britain, France (Leraut, 2012), Romania (Iamandei, 2010), Austria, Italy, Czech Republic, Hungary, Turkey and Slovenia (Ramel & Rossi, 2013). It is a very characteristic, large species (Plate 1) and confusion with other species is impossible.

Results and discussion

In spite of intensive light trapping and other studies during the past several years, including close to the localities mentioned below, *C. perspectalis* has not been found in a natural or semi-natural environment. Almost all examples encountered were observed resting, in the day time, in villages or towns with gardens containing *Buxus* spp. The only exception was at the Penny Market in Balchik, where examples were resting on the wall near lamps and there were no box nearby. As an active pest, *Cydalima perspectalis* is recorded only in the Botanical Garden at Balchik.

At present in Bulgaria, *C. perspectalis* is known from the following localities:

Black Sea coast: Balchik, The Botanical Garden, 43°24'17.90"N, 28°08'49.40"E – UTM grid reference 35TNJ90, 18.viii.2014, S. Beshkov, S. Abadjiev & D. Dimitrov leg; Balchik Town, Penny Market, 43°25'40.80"N, 28°09'41.00"E – UTM grid reference 35TNJ90, 18.viii.2014, S. Beshkov & S. Abadjiev leg; Albena Resort,

UTM grid reference 35TNJ80, D. Dimitrov (pers. comm.); Zlatni Tyasatsi Resort, UTM grid reference 35TJH89, D. Dimitrov (pers. comm.); Varna town, UTM grid reference 35TNH78, D. Dimitrov (pers. comm.); Varna Zhurnalist Resort, 9.x.2014, photographed by N. Draganova.

South-west Bulgaria: Usoyka Village - 42°11'32.92"N, 23°03'36.71"E – UTM grid reference 34TFM77, 11.viii.2014, S. Beshkov & S. Abadjiev leg.

South-east Bulgaria: Strandzha Mts, Gramatikovo Village – 42°03'43.84"N, 27°39'17.24"E — UTM grid reference 35TNG55, 13.viii.2014, N. Simov leg.

Plate 1. *C. perspectalis,* Balchik, The Botanical Garden, 18.viii.2014.

These localities are indicated in the map Fig. 1 and suggest that in the near future *C. perspectalis* might also be detected in the Republic of Macedonia and in Greece.

According to plant protection experts, there are no reports of *C. perspectalis* in the north-eastern coastal area of Bulgaria in 2013. However, its presence there in that year seems possible, perhaps in low density in gardens and near villages with planted Box. According to the same specialists there is now evidence for its presence along the northern Black Sea coast as indicated above, but no reports are available from countryside areas.

In the Botanical Garden at Balchik, *C. perspectalis* is recorded as mature larvae at the end of June and beginning of July 2014. Eggs are laid on the underside of the leaves in groups of different sizes (Plate 2a). First instar larvae can be found in March/April. These feed as miners within the leaves and then skeletonise them (Plate 2b). Last instar larvae (Plate 2c) feed on the leaves surrounded by loose webbing,

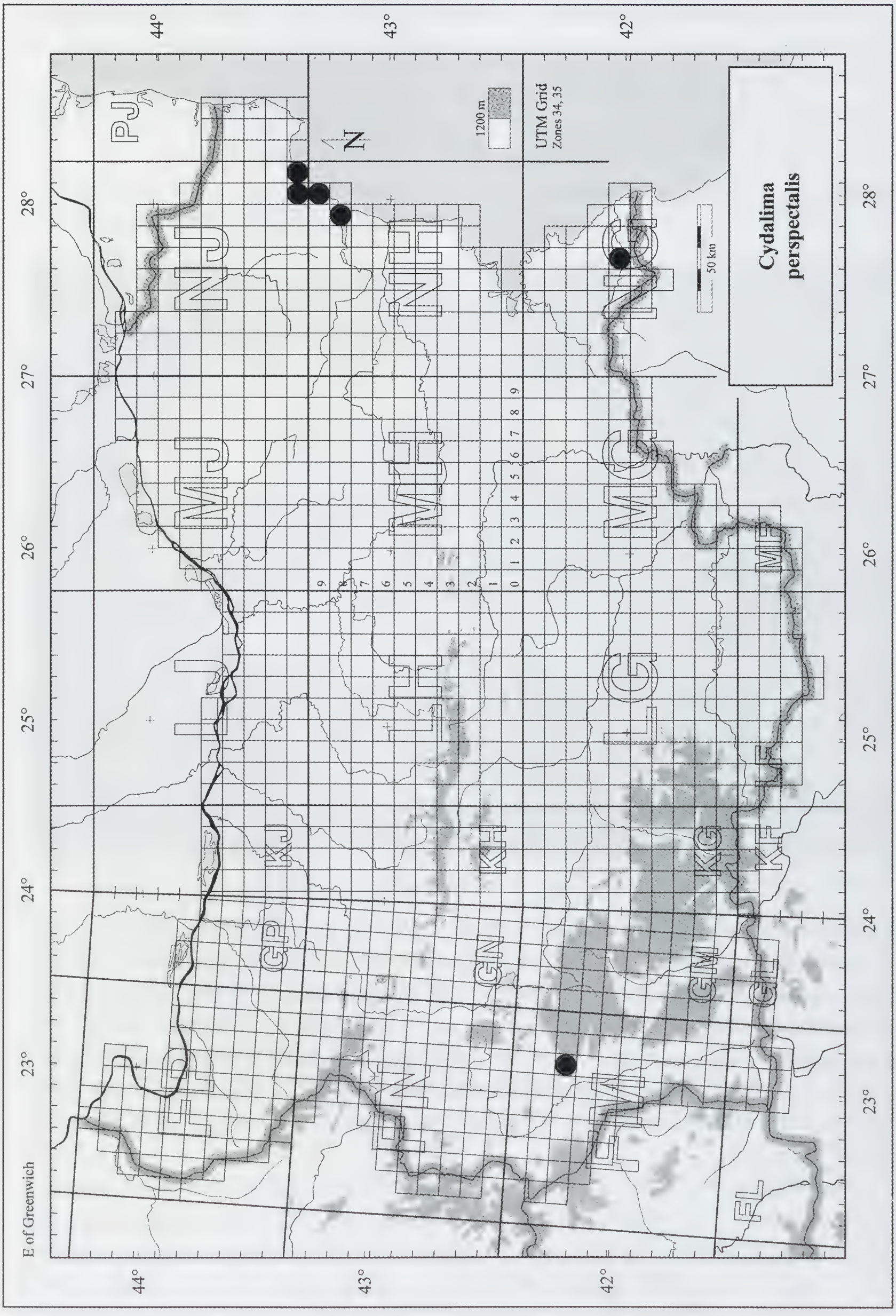

Figure 1. Known distribution of *C. perspectalis* in Bulgaria.

Plate 2. Developmental stages of *Cydalima perspectalis* at Balchik Botanical Gardens, Bulgaria. **a.** Eggs, 18.viii.2014; **b.** Young larvae, 18.viii.2014; **c.** Final instar larva, 18.viii.2014; **d.** Larval feeding damage and cocoon in a web, 10.viii.2014.

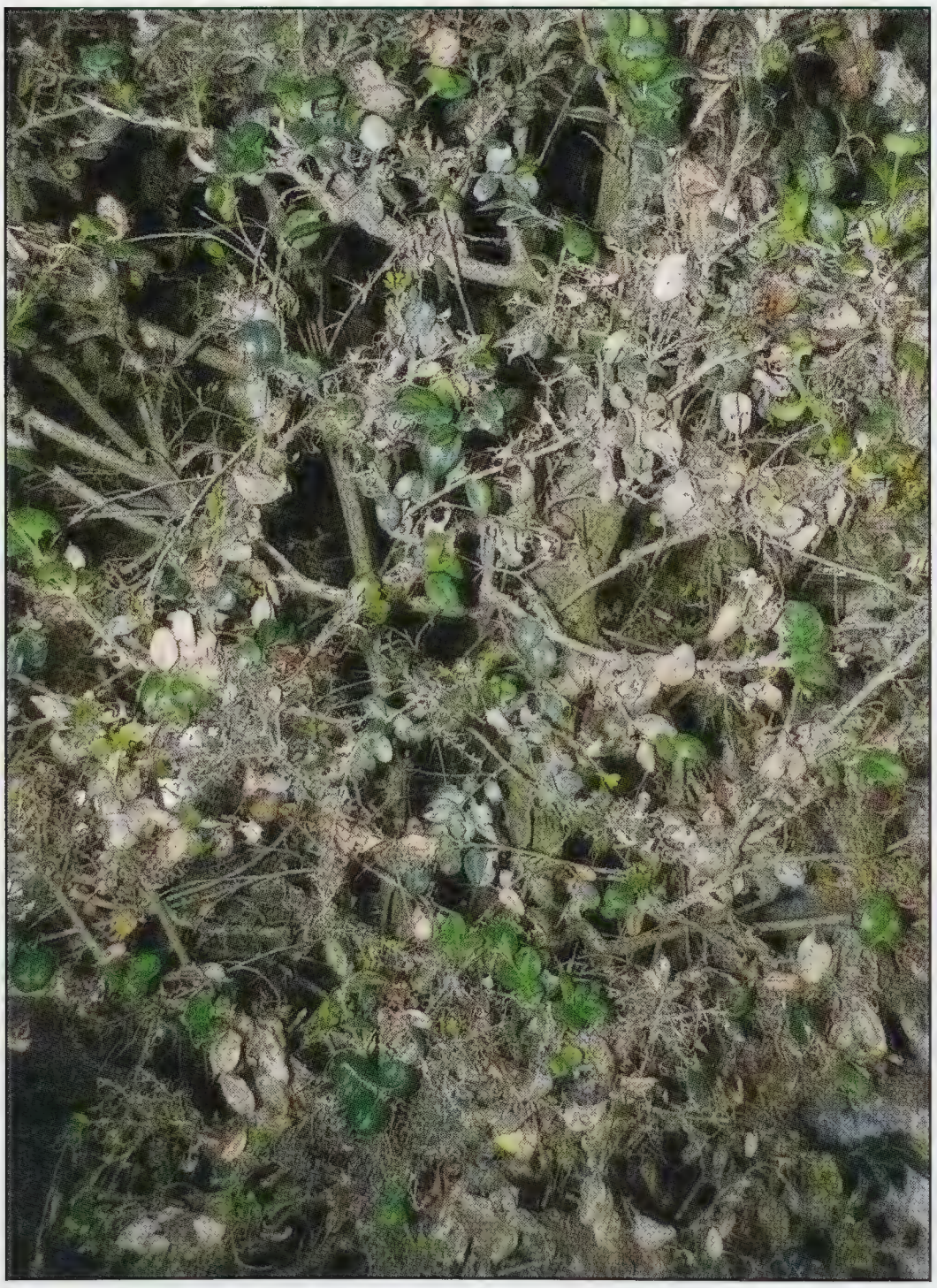

Plate 3. Damage on Box, Balchik, The Botanical Garden, 18.viii.2014.

pupating within a web (Plate 2d). In the Botanical Garden we observed that the life cycle is more intensive on Box plants in shaded positions, because the upper temperature tolerance of *C. perspectalis* is about 30°C. In the beginning of July there were two rows of *Buxus* sp. with height of about 1 m on relatively shady place, which were almost completely destroyed in a short period of one week. Similar rows on sunny places were in relatively good condition. On 19 August 2014, affected Box plants were sprayed with a strong water jet, which washed away the larvae and the eggs an effective alternative to chemical and biological control methods.

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Aphelia unitana (Hb.) and Bilberry Tortrix *Aphelia viburnana* (D. & S.) (Lep.: Tortricidae) found in Gloucestershire

Until 2013, the only *Aphelia* species recorded in Gloucestershire was the Timothy Tortrix *Aphelia paleana* (Hb.). In 2013 I reared two male *Aphelia* specimens from larvae found feeding on *Angelica* in a wooded Cotswold valley in East Gloucestershire (VC 33, O. S. grid square SP 13) on 27 May 2013. Unlike *A. paleana* these lacked orange colouration on and close to the head, and on dissection they appeared to be *A. unitana* when compared with the aedeagus photos of these species on the dissection group website (*www.dissectiongroup.co.uk*). To be certain I wanted to compare them under the microscope with a male *A. paleana*, so I kept both of the male *Aphelia* specimens I found at other sites on 26 June 2013 (grid square SO 91) and 5 July 2013 (SO 81). From their colouration and on dissection however, these also appeared to be *A. unitana*. I decided to delay recording them and wait until the 2014 season, because I usually find some definite *A. paleana* specimens each year.

As expected I did find *A. paleana* specimens in 2014, the first being a male in West Gloucestershire (VC 34, grid square ST 79), on 21 June. On comparing its aedeagus with those of the four specimens from 2013, all four were indeed *A. unitana*. In addition, specimens found on 1 June 2014 (SO 90) and 26 June 2014 (SP 12) were also male *A. unitana*. So *Aphelia unitana*, a species listed formally as being "Nationally Scarce", has been found in five different ten-kilometre grid squares in Vice County 33 in the past two years.

Unlike book illustrations showing how different they can be, the male specimens of *A. paleana* and *A. unitana* looked so similar over most of the forewing surface that it was not immediately obvious that they were different species. It seems quite likely that some of the past records of *A. paleana* in the Cotswolds were misidentifications of specimens of *A. unitana* made because the former was expected and the latter was not, and/or because the only slightly different tint of the latter's scales on and near the head was mistaken as the more orange colouration of the former's. There can be a "trick of the light" effect making the scales in this area appear darker in natural light than they actually are when viewed in better lighting under a microscope.

The Bilberry Tortrix *Aphelia viburnana* is rated as common in Britain, with past records from most vice-counties, but some gaps such as the two Gloucestershire vice counties. It was therefore one of the species I had hoped to encounter sooner or later, and a somewhat damaged tortrix specimen found at Butterfly Conservation's Rough Bank reserve (SO 90, VC 33) on 21 July 2014 turned out to be a male of this species. The foodplants that *A. viburnana* uses in the Cotswolds are unclear, but Bilberry *Vaccinium myrtillus* is not found in this area.

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The larva aeterna

Luffia ferchaultella (Stephens) is a wingless, parthenogenetic, case-bearing member of the Psychidae. Its normal lifespan begins as an ovum deposited within the maternal case and is completed the following summer when the resulting imago itself oviposits and dies. The species often lives in large colonies such as the one on the fence posts of a Normandy pasture that I have been studying for several years.

Each August it is apparent that there are two distinct generations of larvae living alongside each other. Tiny first instar larvae commence grazing on the lichen covered fence posts and are accompanied by the large final instar caterpillars which are siblings of the newcomers' parents. These "aunts and uncles" are destined for a "Peter Pan" existence, living on in a much extended larval period, without ever attaining the adult state. Roman poets referred to a mythological child-god who stayed forever young as *puer aeternus*. The term has been adopted by Jungian psychologists to describe an element of the human psyche; the female equivalent is the *puella aeterna*. As the word larva is a feminine noun the Peter Pan caterpillar state is referred to here as the *larva aeterna*.

In August 2014, I collected 34 of these *larvae aeternae* and reared them in captivity. The specimens were divided into pairs, each housed in plastic pots containing pieces of lichen-covered bark. All were kept in a garden shed, heated only at night-time, to maintain an ambient temperature between 10-18ºC.

On 21 September it was noted that only four larvae were still actively feeding whilst the remainder had become dormant. The four mobile individuals were transferred outside to a lichen-covered log which was carefully positioned in the garden in an attempt to mimic optimal natural conditions for them to enter their second winter. For a couple of weeks the voracious four transported themselves around the surface of the log presumably influenced by light intensity, warmth and humidity on each of the log's different aspects. All four larval cases were marked by queen bee marker ink to facilitate the observation of their dispersion. Unfortunately three disappeared on one damp evening and are suspected to be victims of grazing slugs. Who knew that the (probably accidental) ingestion of *Psychidae* by slugs was a thing?!

Meanwhile, back in the garden shed, things were becoming interesting. Adult ichneumons began emerging from the *Luffia* cases on 28 September and by 9 October there were twelve males which I recognised as belonging to genus *Diadegma*. But why were they all males? I e-mailed the question to some of my entomologist friends and three possible explanations were proposed:

1. Suboptimal host (parent female chooses to lay predominantly unfertilised male eggs, reserving her female eggs for a better host). All Hymenoptera have the ability to choose the sex of their offspring (by allowing sperm stored in the spermatheca to access the egg as it passes down the oviduct - there is a sphincter opening under the female's control). Fertilised (diploid) eggs become female, while unfertilised (haploid) eggs become male.

2. Female parents had mostly not mated (so laid unfertilised eggs = male). Quite possible, in a species that is locally rare or if females have dispersed from a place where it is rare. Perhaps improbable in this particular case.

Plate 1: Two generations of *Luffia ferchaultella* larvae feeding alongside each other on 6 October 2012. The case on the left is occupied by a healthy caterpillar whilst the large case on the right belongs to a parasitized sibling of its parent and is deemed to be a *Larva aeterna*.

Plate 2: *Diadegma naryciae* Horstmann 2008; one of the parasitoids responsible for creating *Larvae aeternae* of *Luffia ferchaultella*.

3. In-breeding, producing diploid males. When sex determination is at a single locus (the commonest situation in Hymenoptera) the usual haplodiploidy to produce diploid females and haploid males depends to an important extent on there being sufficient variation at that locus in the mating pool at large, and it can break down if the population becomes too inbred, such that some of the diploids are homozygous. In this scenario they become (generally non-functional) males. Straight haplodiploidy is thus a bit of a simplification - what it really amounts to is that females are heterozygous (at the sex-determining locus) while males are homozygous. If they are haploid (as in normal, functional males) they are necessarily homozygous (as there is only one copy), but homozygous diploids are also male. This seemed to be a plausible explanation in the case of the isolated population being studied with the consequent risk that this colony might become extinct without some incoming genetic enrichment.

It seems however that parasitoid emergence is a game of two halves. By 18 October the final score revealed a male:female ratio of 18:11. The wisdom in an earlier Dick Askew communication that "*most parasitoids are protandrous*" became self evident.

The emergence of the females was a godsend to the task of identifying the parasitoid species. The late Klaus Horstmann produced excellent descriptions and line diagrams of many ichneumons and the areolet shape, upturned ovipositor and area superomedia carinae suggest that the *Luffia* parasitoid is *Diadegma naryciae* Horstmann 2008.

The prolonging of a caterpillar's life by a hijacking parasitoid does not seem to have a descriptive term. There could be debate as to whether this is merely a slowing of the maturation rate rather than an inhibition of the caterpillar's pupation stimulus. My hypothesis is that healthy *Luffia* were attacked as late instar caterpillars by *Diadegma naryciae* that had over-wintered inside caterpillars (of the same generation) parasitised in the previous October. I feel sure that the parasitoid then switches off the caterpillar's pupation mechanism to create the *Larva aeterna*. Now I just have to prove it!

I am grateful for the advice and encouragement provided in my ongoing studies by Mark Shaw, Gavin Broad, Dick Askew, Martin Schwarz and Andrew Polaszek.

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Epermenia aequidentellus (Hofmann) (Lep.: Epermeniidae) – new for Norfolk

The evening of 30 October 2014 looked promising for a bit of moth trapping. The temperature was around the 14 degrees and although the cloud had cleared revealing a bright, first-quarter moon a stiff southerly breeze could perhaps bring in something interesting. So I took the traps to Burgh St Peter a regular site for me and one that has turned up some very good moths over the three years I have recorded there. Fifteen minutes after switching on, one trap was full of hornets *Vespa crabro* and no sign of any moths. My thoughts were that if the other two traps were being similarly invaded

there would be no point in staying and I might as well pack up and go home. Fortunately they hosted just two or three hornets that were easy to cope with.

Considering how warm it was, there were not many moths coming to the traps. *Epirrita* species were the most abundant with 20 or so. A few *Udea ferrugalis* (Hb.) and *Plutella xylostella* (L.) were the only representatives from the migrants. With things not living up to expectations I decided to call it an evening with a sum total of 10 species including a very small pale micro I had potted that at first glance looked like a *Coleophora*. As it was a bit late in the year for these to still be about I thought I had better give it a closer look before releasing. It was then that I spotted the scale tufts which immediately ruled out *Coleophora*. I pocketed it for a better check in the

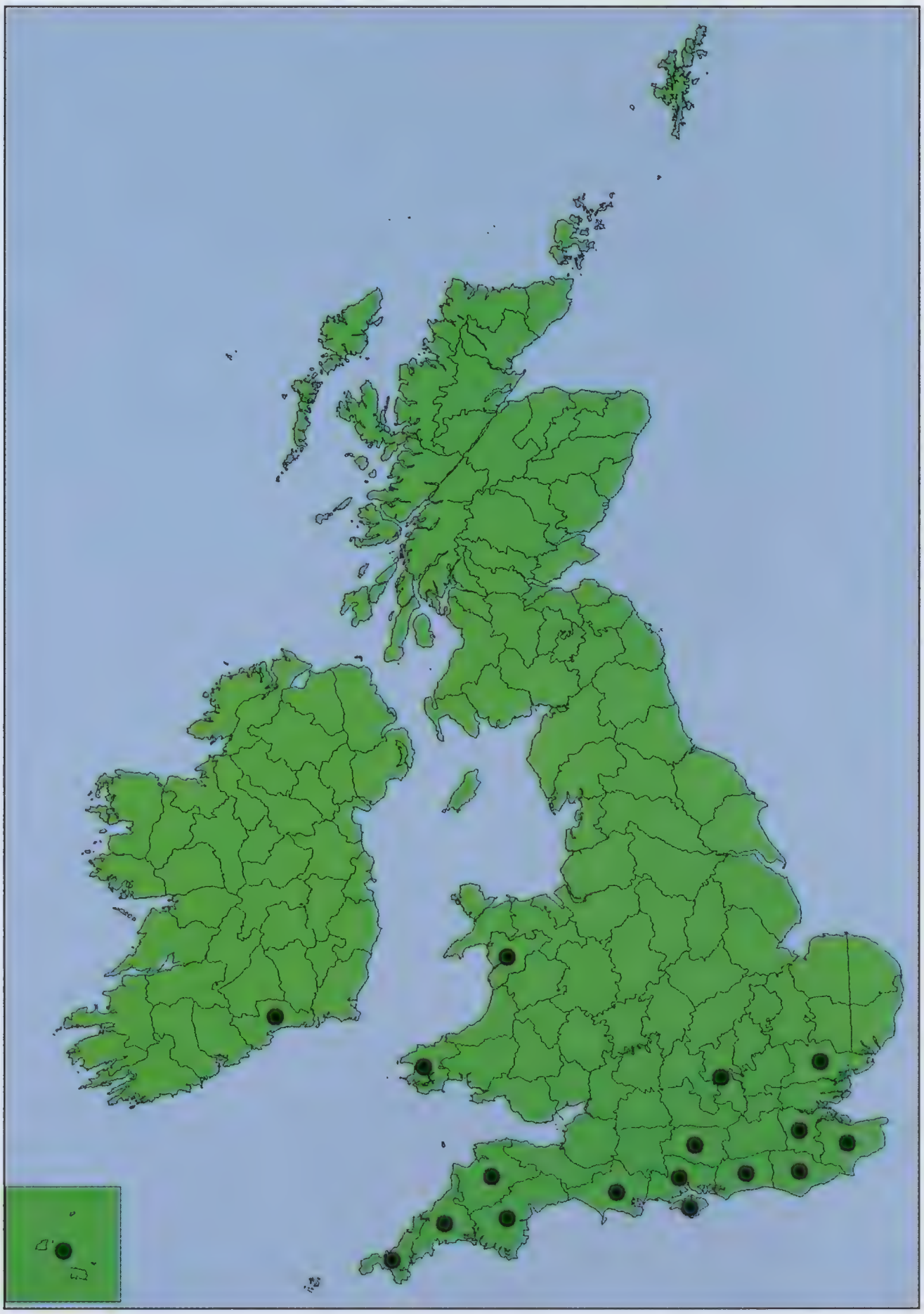

Plate 1. British Isles distribution of Epermenia aequidentellus at December 2014 (map sourced from *http://www.mothscount.org/uploads/0484_Epermenia_aequidentellus.png*).

Plate 1: Capture site of *Epermenia aequidentellus* at Burgh St Peter, Norfolk.

morning, thinking it was either a *Mompha* or possibly a small light coloured *Epermenia chaerophyllella* (Goeze).

The morning light revealed a small pale moth with long narrow wings, four small, dark scale tufts, a dark area around the head and a couple of dark marks on the wings. Obviously an *Epermenia*, not resembling either *falciformis* (Haworth) or *chaerophyllella*, but most like *aequidentellus* which, upon an Internet search, seemed an unlikely species to find in Norfolk as nearly all records are from the south coast; the distribution map below is reproduced from *http://www.mothscount.org/text/108/micro_moth_distribution_maps.html*).

So I sent out photos of the moth to Jon Clifton and Jim Wheeler who agreed that it looked like *aequidentellus*, but due to the significance of the record decided that examination of the genitalia would be needed to be absolutely sure. Jon Clifton was keen to do this and the result confirmed its identity as a male *Epermenia aequidentellus*.

So – a mystery! Is it a resident species on the site or was it blown in from elsewhere? The expected foodplant of Wild Carrot *Daucus carota* is fairly widespread in this general area of Norfolk and although the site has not been searched it appears likely from general aspects of the habitat (Plate 1), that the foodplant may be present.

To my knowledge, this is the second record for East Anglia, the first being near Writtle, in Essex during 2005 (see *www.essexfieldclub.org.uk/portal/p/Species+Account/s/Epermenia+aequidentellus*).

Many thanks to Jon Clifton, in whose collection the moth and associated genitalia slide now reside, for dissecting the moth and for commenting on an earlier draft of this Note.

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Marbled Green *Nyctobrya muralis* (Forster) and Scarce Silver Y *Syngrapha interrogationis* (L.) (Lep.: Noctuidae) in Huntingdonshire

On 27 July 2014 Martin Lovell, who runs a moth trap in his garden in Ramsey, sent me a few photographs of three moths the identity of which he was unsure of. These had been found in his trap that had been deployed the previous evening.

Of course, naming moths from photographs is a generally unsatisfactory methodology – other than on those rare occasions when a range of images is supplied showing all of the necessary features for reliable identification. Nevertheless, one image looked just right for a Marbled Green *Nyctobrya muralis* (formerly *Cryphia muralis*). Although a couple of moth trappers have claimed this species for Huntingdonshire in the past, neither had retained the specimen or photographed it and so their records were necessarily discounted. Thus, the present record would be the first for the vice-county if confirmed. During early October I received from Martin a box of moths requiring dissection to determine species; this included the possible *muralis* which I was pleased to discover was correct.

Left: *Nyctobrya muralis* (Forster), Ramsey, Huntingdonshire, 27.vii.2014, leg. M. Lovell; right: *Syngrapha interrogationis* (L.), Ramsey, Huntingdonshire, 27.vii.2014, leg. M. Lovell.

The box also contained a Scarce Silver Y *Syngrapha interrogationis*, caught on the same night in the same trap and providing another a new county record for Huntingdonshire.

At the time of writing the Huntingdonshire lists contains 1605 species of butterflies and moths, of which 947 are of what are termed micro-moths, 61 are butterflies and 597 macro-moths. To add two new species of macro-moths to the county list on the same night in the same trap was quite a unique event.

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Rhipidothrips brunneus Williams, 1913 (Thysanoptera: Aeolothripidae) in north Kent

A white water trap was set up in an area of rank, *Arrhenatherum elatius* dominated grassland at Queenborough, Isle of Sheppey, Kent between 15 and 29 May 2014. Among the contents were four species of Thysanoptera, namely *Aeolothrips intermedius* Bagnall, 1934, *Melanthrips ficalbii* Buffa, 1907, *Melanthrips fuscus* (Sulzer, 1776) and *Rhipidothrips brunneus* Williams, 1913. The specimens were slide mounted and provisionally identified using Mound, L.A., Morison, G.D., Pitkin, B.R. & Palmer, J.M. (1976. Thysanoptera. *Handbooks for the Identification of British Insects* **Vol 1, part 11:** 79pp. Royal Entomological Society of London). The identities were confirmed by Dominique Collins of The Food and Environment Research Agency.

As the authors of the *Handbook* stated that *Rhipidothrips brunneus* was known in Britain from specimens 'collected four times near the coast in Sussex between 1915

and 1930' I asked Dominique if he knew of any records subsequent to 1976. He replied that, from a visit to the Natural History Museum, London during 2009, there were nine slides from various sites in Sussex from 1929 and 1930. This specimen of *Rhipidothrips brunneus* was a micropterous female.

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Psallus salicis (Kirschbaum) (Hem.: Miridae) new to Oxfordshire

The small, dark red capsid bug *Psallus salicis* lives on alders *Alnus* spp. (Betulaceae) and the adults may be beaten from this tree in August. As with many insects, it has been subject to name changes, being known as *Psallus alnicola* Douglas & Scott in Southwood & Leston (1959, *Land and water bugs of the British Isles*, Warne, London)

Fig. 1. Distribution of *Psallus salicis* in England and Wales.

(see *https://sites.google.com/site/thehemipterist*)

Plate 1. *Psallus salicis* New Marston Meadows, Oxford, 31.viii.2013, leg. R. Ryan

and subsequently as *Psallus scholtzi* Douglas & Scott, before ending up with its present label. The members of *Psallus* Fieber are often regarded as being difficult to identify, but the late appearance and host association of *P. salicis* greatly narrow the possibilities, and the only other commonly occurring bug with which it is likely to be confused is *Psallus falleni* Reuter, which occurs on birch *Betula* spp. (Betulaceae), at the same time of year. By collecting a series of both species, the two can be readily distinguished by comparing the pale band at the base of the cuneus, which is much narrower in *P. salicis*.

The insect is widely distributed within the British Isles, but there are many gaps in its county distribution, as shown in Figure 1. This apparent under-recording is probably due to the perceived difficulty of the genus to which it belongs, together with the lack of an up-to-date compilation of the county distribution for the Hemiptera-Heteroptera. The last was Massee (1955, *Ent. mon. Mag.* **91**: 7-27), the age of which necessitated a laborious literature search in order to confirm each putative new county record. This problem has now been overcome, with the compilation of a new county distribution (Ryan, 2014, *Hemipterist* **1**: 38-103, *https://sites.google.com/site/ thehemipterist*), from which the map of Figure 1 was drawn. This work revealed, to my surprise, that my home county of Oxfordshire was one of the counties lacking a record of the insect.

I had first encountered the animal in the county on 11 August 2009 along the River Windrush, near Cogges Manor Farm, Witney (O.S. grid reference SP 360093), from where the county recorder, Mr. John Campbell, had taken it in 1993. More recently, I have found it closer to home in Oxford, along the River Cherwell in New Marston Meadows on 31 August 2013 (SP 521071).

This attractive little insect is likely to occur in many more counties, from which it has yet to be recorded, and will provide ample reward to anyone willing to search for it along rivers and streams in the late summer.

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Northern Dart *Xestia alpicola* (Zett.) ssp. *alpina* (H. & W.) (Lep.: Noctuidae): a failed rearing attempt

On 23 July 2013, Tom Prescott found a female Northern Dart *Xestia alpicola alpina* by day on A'Chailleach, near Newtonmore in East Inverness-shire. She laid about 90 eggs, mainly on sprigs of Crowberry *Empetrum nigrum*. Most were kindly sent to me for rearing.

There were no illusions about the difficulty of the task, since in the wild this species has a two-year life cycle, hibernating twice as a larva. The rearing accounts in Buckler (1893. *The larvae of the British Butterflies and Moths*, 5. London) gave no cause for optimism. With one attempt he started with 85 fertile eggs, but all larvae were dead within three months. His second attempt fared even worse, with larvae from 30 eggs surviving less than three weeks. Then there is Goater's account (in Heath & Emmet (eds.) 1979. *The Moths and Butterflies of Great Britain and Ireland*, vol. 9), where all the larvae died after one month when fed on Silver Birch *Betula pendula*. However, the normal foodplant, Crowberry, is readily available at my site, increasing the chance of success.

The eggs began hatching on 2 August, ten days after they were laid. In most cases the eggshell was eaten down to its base. The hatchlings were offered a mixture of Crowberry, Heather *Calluna vulgaris*, Cross-leaved Heath *Erica tetralix*, Bilberry *Vaccinium myrtillis*, Eared Willow *Salix aurita*, Knotgrass *Polygonum aviculare* and grasses Gramineae. By 4 August, 65 larvae had hatched. They were split into four containers. One week later there had been no losses. Small signs of feeding damage were visible on all the above plants except the grasses. By 28 August, 60 larvae were still alive, though with little growth. Some of the frass was bright purple, suggesting that the flowers of Heather were being eaten. So far, so good – but would it last?

Needless to say, it didn't. By 7 September only 46 larvae were still alive; by 13 October this was down to 31. Some of the losses were due to mould, which was visible under a lens as dark patches on the skin. Other corpses showed no obvious sign of mould but were shrivelled. Often the losses were mainly in one container, with the others less affected.

During these early weeks the larvae grew little, yet moulted remarkably often. On hatching they measured slightly below 3mm in length, then moulted to second instar when only 4mm long. This moult was very obvious because of the change of body colour from white to purplish red and the head from black to brown. A second moult quickly followed at 6mm and a third moult at 7.5mm. This matches the observations of Buckler (*loc. cit.*), whose larvae had already moulted twice within a fortnight of hatching. Thus by the end of September many of my larvae were already in their fourth instar yet measured no more that 8mm in length. I have reared numerous noctuids from the egg including several other *Xestia* species, but never encountered a similar strategy. One larva reached 5th instar at only 10mm long on 26th October, but by now development was becoming less synchronised. Subsequently it was impossible to keep track of the instars, although moults did become much less frequent.

By 14 November, only 23 larvae were still alive. It was clear that the project was in trouble unless something could be done to reduce the losses. Some larvae appeared to be dehydrated. They were observed to drink eagerly when sprayed with water. Perhaps they were not getting enough fluid from their foodplant, since they were eating so sparingly. The decision was made to keep the larvae in more moist conditions. They were divided between five smaller, clear plastic containers lined with absorbent tissue. To reduce the obvious risk of mould, only Crowberry

Plate 1. Larva of *Xestia alpicola alpina* at 16mm, 14 February 2014. Ex female, 23 July 2013, A'Chailleach, Newtonmore, East Inverness-shire.

Plate 2. Larva of *Xestia alpicola alpina* penultimate instar, 21mm, 27 March 2014. Ex female, 23 July 2013, A'Chailleach, Newtonmore, East Inverness-shire.

was now provided, as this is resistant to fungal growth. It was renewed weekly or every ten days. Sprigs were selected from at least five different plants, in case some were more palatable than others (as did appear to be the case). The foodplant was sprayed with untreated spring water so that beads of condensation were always present on the lid of the container. Such a regime demanded meticulous attention to hygiene. The kitchen towel lining was replaced frequently to remove the frass before it went mouldy. At every food change, the plastic container was sterilised inside and out by being held in the steam of a boiling kettle. The five containers were kept in different rooms, ranging from the warm kitchen to my frugally heated study.

Initially the damper rearing conditions appeared to be working. By 15 January 2014, 20 larvae were still alive and apparently thriving – just three losses in two months. Also they had grown, with the largest now 15mm in length. By 5 March, 18 were still alive, though they were not feeding much. Alas, by the end of the month five more had died, one due to mould but the others for no obvious reason. My previous optimism quickly vanished – 13 seemed an ominous number.

Yet as spring progressed, hopes began to rise once more. April and then May passed with no further losses. On 1 June, all 13 were still alive. Moreover, two appeared to be in their final instar, with a larger head and leathery wrinkled skin, as originally described by Buckler (*loc. cit.*) They seemed fine and healthy. There would be time for them to feed up and produce a moth that year. Except that they didn't. Instead, they died, suddenly and for no obvious reason, along with six of their siblings. It was then that I realised my rearing project would inevitably fail.

Sure enough, the five larvae still alive on 5 July had dwindled to a lone survivor on 2 August, exactly a year after the first eggs hatched. It was not yet in its final instar. By mid month it was clearly ailing, and on 25 August it died.

Some failures generate the urge to try again, but this one did not. I cannot think of anything I did wrong or might have done differently. It is some comfort that Ahola and Silvonen (2011. *Larvae of Northern European Noctuidae*. Vaasa) state for this species: "rearing has been extraordinarily difficult even when compared with the congeners generally known to be difficult". Whereas the other northern *Xestia* larvae usually reach full growth before dying, *alpicola* dies in any instar for no evident reason (Kimmo Silvonen, pers. comm.). That exactly matched my own experience. It seems that the two-year life cycle is obligatory; perhaps any attempts to rush it prove fatal. Maybe Northern Dart could be reared under entirely natural conditions, caged on top of a mountain, but that would hardly qualify as captive rearing

Nevertheless, the effort was not entirely wasted. Photographs were obtained of the various instars; these can be viewed on Reg Fry's website *www.ukleps.org*. I had particularly wanted to see the penultimate instar larva, said by Buckler (*loc. cit.*) to be more brightly and distinctly marked than the final instar. Subsequent authors including Porter (1997. *The Colour Identification Guide to Caterpillars of the British Isles*. Viking) have repeated this assertion. In fact, among those I reared there was little if any difference between penultimate and final instar apart from the texture of

Plate 3. Larva of *Xestia alpicola alpine*, recently moulted to final instar, brown form, 3 June 2014. Ex female, 23 July 2013, A'Chailleach, Newtonmore, East Inverness-shire.

Plate 4. Larva of *Xestia alpicola alpine*, final instar, reddish form, 5 July 2014. Ex female, 23 July 2013, A'Chailleach, Newtonmore, East Inverness-shire.

the skin. Buckler's account appears to be based on just one of four Perthshire larvae he purchased in June 1880 from T. W. Salvage. His illustration shows a stronger than usual pale subdorsal line edged above by dark blotches. Of the two penultimate instars illustrated in Ahola & Silvonen (*loc. cit.*), one freshly moulted example is contrastingly marked, but the other is far plainer, confirming that the supposed difference is not consistent and is generally much less than previously believed.

Also unexpected were the larva's small weak prolegs and claspers, particularly in the later instars. These suggest that it lives at ground level, hidden amongst or under the mats of crowberry. Larvae seemed reluctant to grip or cling to a stem, and indeed spent nearly all their time on the floor of their container beneath the foodplant. Even when the containers were checked at night, only on rare occasions was a larva visible, while actual feeding was never observed during the whole of the study period. Having once tried to find Northern Dart larvae at a known site by torchlight in autumn, I now understand why this was unsuccessful - and not just because of the driving rain and howling gale!

Thanks go to Tom Prescott for so kindly giving me the eggs. I am grateful to Sue Hough, who fearlessly went up the hill to collect Crowberry for the larvae during the six weeks after my hip replacement.

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Least Minor *Photedes captiuncula* (Tr.) ssp. *tincta* (Kane, 1895) (Lep.: Noctuidae) in Ireland – the finding of larvae and a previously unrecorded foodplant

In May 2014 we spent a week in The Burren, County Clare (VC H9). One of our objectives was to find larvae of Least Minor *Photedes captiuncula tincta*. The larva is one of the few not illustrated in Jim Porter's excellent caterpillar book (1997. *The Colour Identification Guide to Caterpillars of the British Isles*. Viking) and no photograph has been published in the British literature since. Porter gives the larval foodplant as the inner parts of Glaucous Sedge *Carex flacca*. Initially, on 18 May, we searched at Meggagh East. Some small plants of *C. flacca* had evidence of the central shoot having died and no flowering spike had been produced. Further examination of these revealed evidence of larval feeding, but no larva was found. Eventually one larva was found in the stem of a larger *C. flacca* plant, but this looked too big to be *P. captiuncula* and from it was reared, on 8 August, a Small Wainscot *Denticucullus pygmina* (Haw.).

On 20 May we searched at Turlough Hill. Here we looked at *C. flacca* which had produced flowering spikes. It was noticed that some of the flowers had failed to develop properly, while the majority in the area were flowering profusely (Plate 1). Further examination lower down in the stems of some of these plants revealed frass and feeding damage. On a few occasions, non-flowering plants of *C. flacca* were found with the central growing shoot slightly wilted or yellowing, and these had evidence of larval feeding within them. Eventually a larva was found internally and

Plate 1. Least Minor *Photedes captiuncula tincta*. Flowers of Glaucous Sedge *Carex flacca* aborted in arrowed plant compared with surrounding plants, indicating evidence of larval feeding within.

it looked as if it was almost certainly *P. captiuncula*. Further searching there produced three more larvae in *C. flacca*. It was apparent that the larvae needed to move from stem to stem because of the number plants in the immediate vicinity where we found feeding damage but no larva. On one occasion we found an isolated plant of *C. flacca* with evidence of feeding though the larva had moved on, but as the neighbouring plants were Blue Moor-grass *Sesleria caerulea*, these were searched. Interestingly an identical larva was found internally in the grass. Turning further attention to the *S. caerulea* another larva was found within that plant.

Plate 2. Larva of Least Minor *Photedes captiuncula* in Blue Moor-grass *Sesleria caerulea*, moth reared.

Plate 3. Larva of Least Minor *Photedes captiuncula* found in Blue Moor-grass *Sesleria caerulea*, died.

On 22 May at Cooloorta Turlough, we were searching for larvae of the Burren Green *Calamia tridens*, which we had found there two years previously in *S. caerulea* on 12 and 15 June 2012. However, on our current visit we failed to find any. Nevertheless our searches revealed some frass internally in the stem of *S. caerulea*. Closer examination revealed a larva (Plates 2 & 3) which again was identical to those found on Turlough Hill.

In total we had found six larvae which we considered to be *P. captiuncula*, all looking identical. They were kept separately in labelled containers and photographs were taken of each larva. Just two moths were reared confirming the larvae were indeed *P. captiuncula*. Both larvae had been from Turlough Hill and found within *S. caerulea*. One was the larva which had almost certainly eaten within the *C. flacca* stem alongside. *S. caerulea* is thus added to *C. flacca* as a foodplant of *P. captiuncula tincta*.

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Bivoltinism in *Epinotia immundana* (Fischer von Röslerstamm) (Lep.: Tortricidae) in the Inner Moray Firth, Scotland

Epinotia immundana (Fischer von Röslerstamm, 1839) is described in the literature as being bivoltine in the south of Great Britain and Ireland, but univoltine in the north (Hancock, Bland & Razowski, 2014, *The Moths and Butterflies of Great Britain and Ireland* vol 5 (Part 2)) and as being single-brooded in Scotland (Sterling & Parsons, 2012, *Field Guide to the Micro Moths of Great Britain and Ireland*). In Scotland it is generally not known to be on the wing before late June where it has one rather long extended brood (Dr M. R. Young, pers. comm.).

On 2 May 2014 I netted two moths having the appearance of *E. immundana* at the Talich nature reserve, the largest remaining area of alder *Alnus* sp. wood in the eastern part of Easter Ross (VC 106) and managed by the Scottish Wildlife Trust. Further individuals were caught by me at the same site on 4 May (a single female), on 5 May (a single male) and on 12 May (11 unsexed) and, at another local site nearby, on 6 May (a single male and female) and on 9 May (1 unsexed). On 29 August 2013 five *E. immundana* were trapped by me at Talich nature reserve which was a more expected date.

The single male caught on 5 May and the male and female caught on 6 May were all dissected and the genitalia examined; these matched the genital structures of *E. immundana*. Photographs of the genitalia preparations of the two 6 May individuals were sent to Jon Clifton who kindly confirmed both as *E. immundana*. As the visual appearance of these three moths was the same as all the others it is assumed that they were all *E. immundana*.

On 5 May Dr Young posted a request on the Scottish Moths Group forum for any other records of *E. immundana* being caught at this time. One member responded to report two *E. immundana* look-alikes found on 7 May near Dumbarton Castle, Dunbartonshire (VC 99) (S. Campbell, pers. comm.) and two others from the Central Belt and South West informed Dr Young that they had sometimes caught early season *E. immundana*.

These records of *E. immundana* in early May are surely the first of two broods, at least in the Inner Moray Firth (perhaps the climate here is more benign than elsewhere, hence the double brood?). However, further recording across Scotland in early summer is needed to show how widespread is bivoltinism in *E. immundana* in Scotland, and whether this is annual or less periodic.

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Slender-striped Rufous *Coenocalpe lapidata* (Hb) (Lep.: Geometridae) in the Southern Highlands of Scotland

On 10 September 2013, a message exchange on the Scottish Moths Yahoo Group, on the Internet, discussed the Highland speciality, Slender-striped Rufous and the best ways of finding this species. At the time, I was carrying out fieldwork at a grazing experiment at the Woodland Trust's Glen Finglas estate, near Calander in West Perthshire (VC87) (Plate 1). I was not within the known range of the species and the on-line discussion had suggested that it might still be rather early in the season. Nonetheless, more in hope than expectation, I placed the single 15W actinic Skinner trap that I had with me in habitat that looked potentially suitable for the species at the base of Gleann nam Meann (O. S. grid reference NN 526106). The location was a damp, rank grassy area at around 200 m altitude with abundant rushes, especially Sharp-flowered Rush *Juncus acutiflorus* and Soft Rush *J. effusus*, whilst one of the suspected larval foodplants, Meadow Buttercup *Ranunculus acris* was also present. The following morning, I was met by the distinctive shape of a Slender-striped Rufous sitting on the underside of one of the Perspex sheets. I botched the transfer to a pot though and the moth flew out of reach. Fortunately, the trap contained a second individual, a male, which was safely potted and photographed. Later that day, I netted another individual, a female, around 200 m from the trap site (Plate 2).

These moths represent the first record of Slender-striped Rufous for VC86, although its presence in the region was predicted by the VC Recorder, John Knowler (2010. *An Annotated Checklist of the Larger Moths of Stirlingshire, West Perthshire and Dunbartonshire*. Glasgow Natural History Society, Glasgow). The next closest records held by the National Moth Recording Scheme database are from 40 km or more to the north in the NN 55 hectad. The species occurred slightly further south along the west coast of Scotland in 2001, with a single Rothamsted Insect Survey record from Lochgilphead (NR 89).

Plate 1. General view of the gross habitat structure at the Glen Finglas estate, near Calendar, West Perthshire. The specific capture location of *Coenocalpe lapidata* is not visible in this picture.

Plate 2. *Coenocalpe lapidata*, female, Glen Finglas estate, near Calendar, West Perthshire, 11.ix.2013, N. A. Littlewood.

It seems that Slender-striped Rufous has lost ground since Victorian times and there are a number of 19th century records from south of the Scottish Central Belt. In the Clyde area, it was described as "*widely distributed on moors, abundant in 1894, though scarce since*" (Dalglish, A.A. & Ord, G.W., 1901. *Macro-lepidoptera*. In Scott Elliot, G.F., Laurie, M. and Murdoch, J.B. (Eds), *Flora, Fauna and Geology of the Clyde Area, Glasgow*. British Association for the Advancement of Science). In Roxburghshire (VC80), it was described as "*Very local, on Kirton Moor and Shankend Station, from Sept. 10th to 20th*" (Renton, W., 1903. A List of the Lepidoptera of Roxburghshire. *The Entomologist and Illustrated Journal of General Entomology* **36**: 162-165). There is also a Lanarkshire (VC77) specimen dated 1894 in the Rothschild Cockayne Kettlewell Collection at the Natural History Museum of London. However, whilst there have been no modern day records from these areas, the late flight season and habitat occupied by the species may lead to a disproportionate degree of under-recording and further records might be expected from beyond the current known range.

Thanks to Helen Bibby, Mark Cubitt, Debbie Fielding, Jeff Waddell and Richard Weddle for providing information that assisted with this note.

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Aulagromyza luteoscutellata (de Meijere, 1924) (Dip.: Agromyzidae) and *Leycesteria formosa* (Wall.)

Aulagromyza luteoscutellata (de Meijere, 1924) is one of six species of agromyzid fly that are associated in Britain with the Caprifolioideae (honeysuckles *Lonicera* spp., snowberries *Symphoricarpos* spp. and himalayan honeysuckle *Leycesteria formosa* (see *http://www.leafmines.co.uk/index.htm* and *http://www.ukflymines.co.uk/index.php*). Until now, this species was known to mine the leaves only of species of *Lonicera* and *Symphoricarpos*, but it is now also reported from *Leycesteria formosa*.

Plate 1. Mine of *Aulagromyza luteoscutellata* in *Leycesteria formosa*, Marple Bridge, 26 November 2014.

The mine (Plate 1) is approximately 6 cms in length and shows a characteristic wide band of green frass within which there are a few small dark grains in the last 2 centimetres or so, together with an exit hole on the upper side of the leaf. It was one of three mines found in leaves of three large *Leycesteria* shrubs in a garden at Marple Bridge, Derbyshire (O.S. grid reference SJ 99; VC 57) on 23 and 26 November 2014. While adding another food plant to the list associated with *A. luteoscutellata*, the record also provides another north Midlands location for the fly which was only recognised as a British species in 2007 (see Edmunds, R. and Ellis, W. 2008. *Aulagromyza luteoscutellata* (De Meijere, 1924), (Dip.: Agromyzidae): New to Great Britain. *Entomologists' Record and Journal of Variation* **120**: 21-24), but which was either previously over-looked or else has moved through England at an unprecedented speed (see Homan R. 2013 The distribution and phenology of *Aulagromyza luteoscutellata* (de Meijere) (Diptera, Agromyzidae). *Dipterists Digest* **20**: 100-102).

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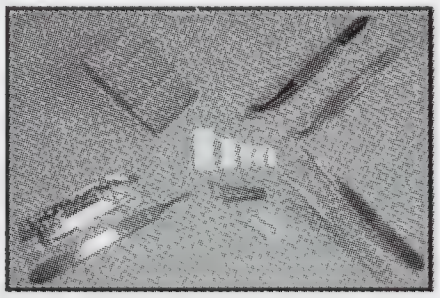

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AN APPEAL FOR RECORDS

I am currently writing a book about the Butterflies and Moths of Huntingdonshire, vice county 31, which I hope to publish in late 2016 or early 2017. Although Huntingdonshire is a small county it does have three nationally important National Nature Reserves; Holme Fen, Monks Wood and Woodwalton Fen, and before it was drained Whittlesea Mere, which was southern England's largest inland lake. Many lepidopterists have visited these National Nature Reserves and have collected many specimens. I have managed to locate many of the records from these sites by various lepidopterists, but without doubt, there are others I have not located. I would be very grateful if anyone has any records of butterflies and moths from these sites and any other sites in Huntingdonshire if they could contact me at the e-mail address below or by post I will let them know if I have located their lists or if I require a copy of their records.

I am also trying to locate records from a collection made by William Quibell. He was born in Louth, Lincolnshire in 1878 and collected extensively in Lincolnshire and I am informed Yorkshire. He worked as a policeman and on his retirement moved to Brampton, Huntingdonshire where he became landlord of the Black Bull public house in 1924, which he renamed 'Shades of Heather'. He continued collecting in Huntingdonshire and had a room which was full of cabinets. He died in 1959 and his collections were sold at auction on Thursday 23rd February 1961 by the auctioneers Debenham, Storr and Johnson Dymond. I have spent some considerable time trying to locate his collections without success and am beginning to believe that they are now lost or were destroyed. If anyone knows if any of his collection still survives I would be grateful if they could let me know.

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The Editor welcomes contributions on British Isles Lepidoptera, on non-British Lepidoptera where likely to be of interest to British researchers and on other groups of British Insects for which specialist English language journals do not currently exist. We accept descriptions of new species. Other subject matter may be accepted entirely at the discretion of the Editor, whose decision is final.

Please follow the format in this issue; if in doubt, ask the Editor. We positively encourage the use of colour photographs of insects and their habitats but their inclusion must enhance the text or serve some other useful purpose. We encourage the use of colour in the interpretation of graphs, charts etc. All images must be sent as individual separate files; please send high resolution files – do not reduce file size for ease of e-mailing. Images embedded (pasted into) word processor files cannot be used.

All papers are subject to peer-review and may be returned for changes prior to acceptance. Shorter communications and Notes are normally reviewed by the Editor but may also be sent for external review before acceptance; to reduce both cost and delay required changes to these are usually made by the Editor.

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The Entomologist's record is now printed in full colour, enabling us to accept a wider range of illustrative and interpretative material. This development has been made possible by a generous bequest by the late Andy Callow.

Front cover image of *D. aprilina* Marshalls Heath Herts 20 October 2008. © John B. Murray

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THE IMMIGRATION OF LEPIDOPTERA TO THE BRITISH ISLES IN 2011

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Abstract

Formally accepted records of immigrant Lepidoptera occurring in the British Isles during the year 2011 are listed and discussed. For less frequently encountered species, full information is given in Annex 1, presented in vice-county order, the individual localities then listed alphabetically for each VC. For the more regular/frequent immigrant species recorded during the season, annual summaries and a selection of the more important records are presented in Annex 2. It will be noted that the current report has been more delayed than previous recent reports; this has been deliberate to allow for the growing number of recorders and sources of immigrant records, and ensure the records listed in each report are as accurate and comprehensive as possible. It is likely this period of delay between the year under consideration and date of publication will continue to be maintained for all future immigration reports. It should also be noted that the species list continues to follow the Bradley (2000) taxonomic order and numbering system in keeping with the Entomologist's Record current policy.

Introduction

2011 proved an excellent immigration season with record arrivals of *Oxyptilus laeta* (Zell.), *Drepana curvatula* (Borkh.), *Itame brunneata* (Thunb.), and *Eublemma parva* (Hb.) being particularly notable features of the spring and summer period (records of the latter species going on to include larvae and examples of a home-bred autumn generation). Also of note during the spring and summer months were two examples of *Catoptria verellus* (Zinck.); the first British record of *Elegia fallax* (Stdgr.); an immigrant example of *Dendrolimus pini* (L.) in VC**9**; three immigrant *Idaea ochrata* (Scop.) scattered along the mid-south coast; two *Notodonta tritophus* (D. & S.) on the same night in VC**15**; the second modern UK record of *Gluphisia crenata* (Esp.); single examples of the immigrant races of *Coscinia cribraria* (L.) and *Lithophane furcifera* (Hufn.); single records of *Agrotis bigramma* (Hb.), *Actinotia polyodon* (Clerck), *Actinotia hyperici* (D. & S.) and *Catocala electa* (View.); seven immigrant specimens of *Catocala sponsa* (L.) and, more unusually, two of *Catocala promissa* (D. & S.) in VC**13**; two *Minucia lunaris* (D. & S.) a day apart; and two spring records of *Tathorhynchus exsiccata* (Led.).

Despite this impressive list of immigrants, the most intense and spectacular period of insect immigration during 2011 took place from late September until mid-October, particularly during the period 29.9 to 5.10. Whilst this was most concentrated in south-west England, scarce immigrants occurred the length and breadth of the British Isles with new VC records of immigrant species frequent and widespread.

This coincided with some exceptional weather conditions, September being the warmest since the vintage immigrant year 2006 and showing mean monthly

temperature countrywide at 1.7°C above the 1971-2000 average. This was particularly the case during the last week of the month, continuing into the first few days of October, with a new British record for October of 29.9°C recorded on the first day of the month at Gravesend, Kent. The heatwave continued into 2 and 3 October with temperatures rising to 28°C; the weather chart below for 3 October shows warm south-westerly winds emanating from Iberia and North Africa.

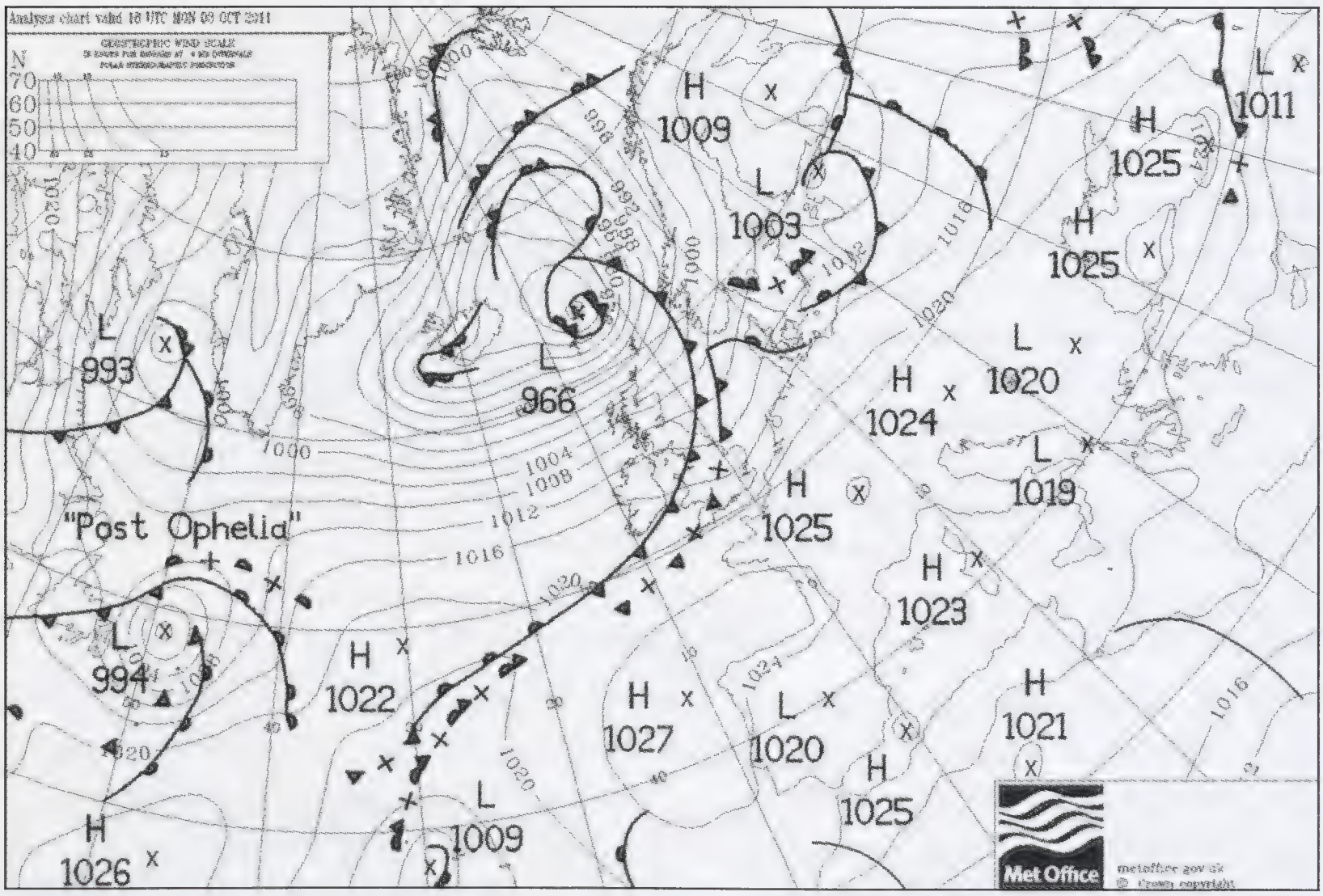

Figure 1. Generalised weather chart for midnight on 3 October 2011.

The peak arrival period occurred during the week 3-9 October immediately following the conditions shown in the above chart and this general autumn period produced some outstanding records including the first UK record of *Sesamia nonagrioides* (Lefeb.) in VC**1** and the second UK record of *Thera vetustata* (D. & S.) in VC**13**. This period also saw record arrivals of *Hellula undalis* (Fabr.), *Spoladea recurvalis* (Fabr.), *Etiella zinckenella* (Treits.) and *Spodoptera cilium* (Guen.), records of *Earias insulana* (Boisd.) and *Chrysodeixis acuta* (Walk.), and exceptional numbers of a number of immigrant species such as *Uresiphita gilvata* (Fab.), *Palpita vitrealis* (Rossi), *Antigastra catalaunalis* (Dup.), *Rhodometra sacraria* (L.) and *Utetheisa pulchella* (L.).

The remainder of the autumn remained mild with westerly or southerly airstreams predominating. As September, the month of October was also the warmest since 2006 and was followed by the warmest November since 1994, with records of interesting immigrant species occurring well into the latter month, these including a late example of *Ochropleura leucogaster* (Frey.) and a significant arrival of *Conistra erythrocephala* (D. & S.).

Guidelines for contributors

To avoid unnecessary delays in publishing future reports, it would help greatly if contributors adhere to the following guidelines: data should include the vice-county, recorder, stage (if not an adult), number observed, and the date. For light-trap records list the date the trap was switched on, not the date it was inspected. This is a universally accepted convention to avoid the possible duplication of records.

There remains a noticeable shortage of records from more northern and inland sites submitted for the current report. Records of migrant species from such sites would be gratefully received for future reports, and the regional summaries and categories of listed records for Annex 2 species have been introduced to take account of records of this nature. County recorders not already submitting migrant data for these annual reports are keenly requested to do so, even if their respective counties are not favourably positioned to receive arrivals. Migrant records from such northern and inland sites are often more significant in showing the range and scale of immigrations of species routinely recorded from more southern, coastal locations.

It should be noted that statistics relating to the total number and distribution of **all** records received/sourced of nocturnal Annex 2 species are now given, so please continue to submit records of all these species. It must also be stressed that it has become impossible to monitor the growing number of e-mail/website migrant forums and the posting of records on such sites will not necessarily result in their inclusion in future reports. It is therefore essential that migrant records are submitted to the relevant county recorder, published within the entomological press or sent directly to the report author.

County recorders, or those submitting large volumes of data are asked to sort their data by vice-county, species name, and then by date order. Contributions are particularly welcome in electronic format (pref. MS Excel) to the author at the e-mail address given at the start of the report. Paper copies may also be submitted. Should readers be aware of any significant omissions or errors in this or earlier reports, these would be welcomed for inclusion in future appendices. Contributors are also requested to provide the middle initial(s) of recorders wherever possible to assist with the accreditation of records.

Recent reports have been extended to include the more interesting records of adventives as these often help to establish the origin of other records or colonisations of the respective or associated species. Extralimital records of resident species that may be the result of immigration or internal vagrancy are also included in reports. Records of this nature are therefore also welcome for inclusion in future reports.

The following abbreviations have been adopted since the 2002 report. These remain unaltered and exclude any variation in status found on the Channel Islands (VC**113**). However the categorisation of individual species is reviewed annually in the light of any recent/ongoing changes in status. A brief introductory statement has also been added to the accounts for a number of listed resident species in order to clarify the type of record that is included in these reports.

Abbreviations

[I] - Primary immigrant or the direct progeny of a primary immigrant. Where this is the only category given, believed to relate to a species that is unable to maintain a viable, self-sustaining resident population through a typical British winter.

[In] – Introduction or importation. A species artificially introduced into Britain by man. Can include synanthropic species that are only able to sustain breeding populations in Britain under conditions that do not occur naturally.

[MC] – Migrant Colonist. An immigrant species that has established extant, short-term breeding populations in Britain, but these believed to have been present for fewer than ten consecutive years.

[R] – Resident. A species with an established breeding population in Britain, this having been present for a minimum of ten successive years.

[FR] – Former Resident. A species that was formerly an established resident but has no known resident populations in Britain at the time of writing.

[V] – Vagrant/wanderer. A species recorded well away from its known British breeding range, but the record most likely to have been the result of internal, domestic dispersal.

Channel Islands (VC**113**) records are no longer included in the main species accounts due to their southerly position, locating them outside the biogeographical area of Great Britain and Ireland. This often leads to differing statuses of listed species within VC**113** and occurrence patterns of immigrant species that are not comparable with records in Great Britain and Ireland. However, records of recent colonists and rare immigrants in VC**113** can be precursors of arrivals in Britain, so significant VC**113** records are given in Annex 3.

ANNEX 1: RECORDS OF SCARCER SPECIES IN 2011

TINEIDAE

0277 ***Oinophila v-flava*** **(Haw.) [R][In][I]**
E. KENT [**15**] Pegwell, 29.7 (Solly *et al.*, 2012).

CHOREUTIDAE

0386 ***Tebenna micalis*** **(Mann) [I]**
W. CORNWALL [**1**] Cury, 9.10 (FTJ); IOS: St Mary's, 1.10, 2.10, 4.10, 13.10 (Scott, 2012a). S. DEVON [**3**] Abbotskerswell, 1.7 (2), 3.7, by day (RF). DORSET [**9**] West Bexington, 1.10 (MJD *et al.*). W. GLOUCESTERSHIRE [**34**] Slimbridge, 26.8, first VC record (A. Prior, in Langmaid & Young, 2012). CARMARTHENSHIRE [**44**] Pembrey CP, 12.11, first VC record (SDSB).

YPONOMEUTIDAE

0449c ***Prays oleae*** **(Bernard) [In]**
ISLE OF WIGHT [**10**] Northwood, 23.9, larval mine, first VC record (D. Biggs per TJN).

OECOPHORIDAE

0642a ***Metalampra italica*** **Baldizzone [I/In/MC]**
N. HAMPSHIRE [**12**] Over Wallop, 13.8, first VC record (TJN *et al.*). W. SUSSEX [**13**] Warnham, 20.6, first VC record (J. Everitt, in Langmaid & Young, 2012). E. KENT [**15**] Kingsdown, 1.9, 4.9 (Jarman & Morris, 2012); New Romney, 24.6 (2), 1.8 (SPC); Saltwood, 16.6 – 27.9 (11) (P. Howe); first VC records.

0652a ***Harpella forficella*** **(Scop.) [In]**
BERKSHIRE [**22**] Barkham, Wokingham, 19.8, new to Britain (Percival & Harvey, 2011).

ETHMIIDAE

0719 ***Ethmia quadrillella*** **(Goeze) [R][I][V]**
Coastal records away from known populations.
E. KENT [**15**] Kingsdown, 2.8 (Jarman & Morris, 2012); Pegwell, 3.8 (Solly *et al.*, 2012).

GELECHIIDAE

0825a ***Tuta absoluta*** **(Meyr.) [In][I]**
W. CORNWALL [**1**] IOS: St Mary's, 30.9 (Scott, 2012a).
WATERFORD [**H6**] Tramore, 12.10, new to Ireland (Bryant & Bond, 2014).

COSMOPTERIGIDAE

0897a ***Anatrachyntis badia*** **(Hodges) [In][I?]**
SURREY [**17**] Putney, 1.10 (at light), first VC record (Langmaid & Young, 2012).

TORTRICIDAE

0955 ***Eupoecilia ambiguella*** **(Hb.) [R][V/I]**
Coastal/extralimital records of possible immigrant examples.
S.E. YORKSHIRE [**61**] Spurn, 2.8 (Spence, 2012).

1052 ***Acleris umbrana*** **(Hb.) [R][V/I]**
Coastal/extralimital records of possible immigrant examples.
W. SUSSEX [**13**] Findon Valley, 22.10, first VC record (MAS, in Langmaid & Young, 2012).

1181 ***Epiblema grandaevana*** **(Lien. & Zell.) [I][In][FR][MC?]**
S.E. YORKSHIRE [**61**] Spurn, 24.6 - 4.7 (4) (Spence, 2012).

1207a ***Gravitarmata margarotana*** **(Hein.) [I/In/R?]**
E. KENT [**15**] Clowes Wood, nr. Whitstable, 1.5, new to Britain (Solly, 2012).

1209a ***Pseudococcyx tessulatana*** **(Stdgr.) [In/I]**
S.E. YORKSHIRE [**61**] Bridlington, 30.8, new to Britain (L. Bruce, in Beaumont, 2012).

1215 ***Thaumatotibia leucotreta*** **(Meyr.) [In]**
MIDDLESEX [**21**] Wembley, 14.9, 16.9, adults to light (GG per CWP).

1263 ***Cydia inquinatana*** **(Hb.) [I][MC?]**
E. NORFOLK [**27**] Lenwade, 25.6, first VC record (KS, JC *et al.*).

1262 ***Cydia amplana*** **(Hb.) [I]**
Total no. reported: **27**
By vice-county: **11** (20), **15** (2), **25** (5).
S. HAMPSHIRE [**11**] Burton, 2.8, 19.8 (J. Southwood per TJN); East Boldre, 10.8 (2) (P. Budd per TJN); Hengistbury Head, 22.9, 2.10 (BE per TJN); Hurn, 24.7, 21.8, 26.8 (MJ per TJN); Needs Ore, 11.8 (AC per TJN); Pennington, 2.8 (2), 22.8 (RC per TJN); Sandy Point, Hayling Island, 12.8, 2.9 (Johnson & Phillips, 2012); Shirley Holmes, 1.8 (P. Budd per TJN); Sway, 27.7, 11.8 (2), 19.8 (S. Keen per TJN). E. KENT [**15**] Dymchurch, 10.9 (JEO); Pegwell, 12.8 (Solly *et al.*, 2012). E. SUFFOLK [**25**] Rushmere St Andrew, 25.7 (2), August (three) (JBH).

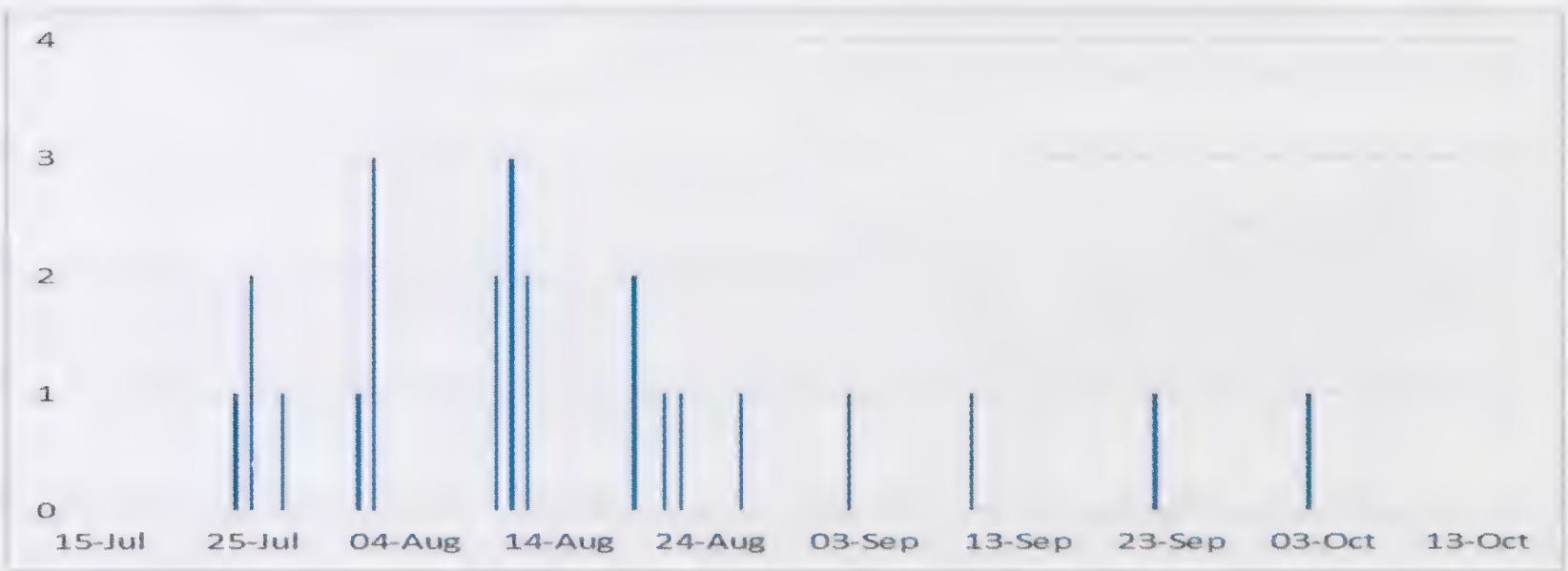

Figure 2. *Cydia amplana* occurrence pattern in 2011 (dated records only).

PYRALIDAE

1289 ***Euchromius ocellea* (Haw.) [I]**
W. CORNWALL [**1**] Buryas Bridge, 1.10 (LHO); IOS: St Mary's, 2.10, 3.10 (2) (Scott, 2012a). OUTER HEBRIDES [**110**] Benbecula, 18.4 (Dawson, 2011).

1317 ***Catoptria verellus* (Zinck.) [I]**
W. SUSSEX [**13**] Walberton, 26.7 (JTR per CRP). E. KENT [**15**] Dymchurch, 16.7 (JEO).

1343 ***Eudonia delunella* (Stainton) [R][I/V]**
Extralimital, coastal records of possible immigrant examples.
E. KENT [**15**] Dungeness, 27.6 (DW).

1355a ***Musotima nitidalis* (Walk.) [In]**
W. SUSSEX [**13**] Crawley Down, 26.10, first VC record (JHC).

1357 ***Evergestis extimalis* (Scop.) [R][I][V]**
An established resident in parts of southern and eastern England, and consequently records have not been included in the current report from the coastal counties between VC's **9** & **61**, or VC's **12** & **26**. The following records are from areas where resident populations are not currently known, and are likely to relate to immigrant or vagrant examples.
W. CORNWALL [**1**] IOS: Longstone, St Mary's, 28.9 (Scott, 2012a).

1360 ***Hellula undalis* (Fabr.) [I]**
Total no. reported: **73**
By vice-county: **1** (67), **6** (1), **9** (1), **15** (3), **41** (1).
W. CORNWALL [**1**] Buryas Bridge, 3.10 (LHO); Greatwork, 1.10 (TJ); Porthgwarra, 2.10 (2, by day) (GBH); IOS: St Agnes, 30.9 – 12.10 (10) (Scott, 2012a); IOS: St Mary's, 30.9 – 15.10 (40, inc. 11 on 3.10) (Scott, 2012a, M. Scott); The Lizard, 1.10, 2.10 (3), 3.10 (4), 4.10 (3), 12.10 (Tunmore, 2012); Wendron, 1.10 (A. Pay). N. SOMERSET [**6**] Burnham-on-sea, 1.10 (per P. Bowyer). DORSET [**9**] Wimborne St Giles, 28.10 (JCW). E. KENT [**15**] Aylesham, 29.10 (D. Shenton); Pegwell, 4.11 (Solly *et al.*, 2012); Saltwood, 27.10 (P. Howe). GLAMORGAN [**41**] Mewslade, 2.10, new to Wales (B. Stewart, in Langmaid & Young, 2012).

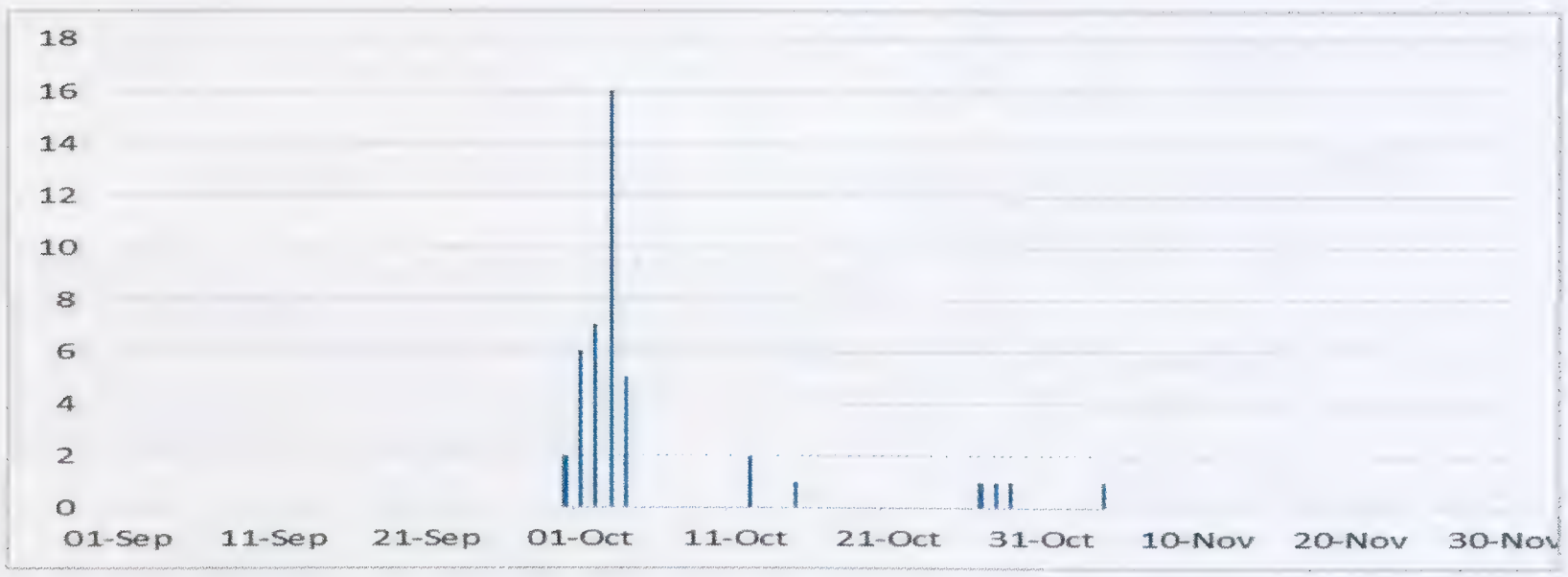

Figure 3. *Hellula undalis* occurrence pattern in 2011 (dated records only).

1369 ***Uresiphita gilvata* (Fab.) [I]**
Total no. reported: **14**
By vice-county: **1** (10), **9** (1), **15** (2), **73** (1).
W. CORNWALL [**1**] IOS: St Agnes, 30.9, 1.10 (Scott, 2012a); IOS: St Mary's, 30.9 (Scott, 2012a); Maenporth, 3.10 (Davis, 2012); Land's End, 29.9-2.10 (2), 20-23.10 (1) (GBH); Mullion Cove, 30.9, 1.10, 2.10 (Tunmore, 2012). DORSET [**9**] Portland Bird Observatory, 3.10 (Cade, 2012). E. KENT [**15**] Greatstone, 3.10 (BBa); Sissinghurst, 31.10 (SJB). KIRKCUDBRIGHTSHIRE [**73**] Carsfad, nr. Dalry, 15.10, first VC record (J. Wormell, H. Ivatt, in Langmaid & Young, 2012).

1374a ***Sclerocona acutellus* (Evers.) [In][I?][MC]**
Records away from the local colony present in VC**10**.
N. DEVON [**4**] Sheepwash, 14.6 (RJW per BPH).

1375 ***Ostrinia nubilalis*** **(Hb.) [R][I][V]**
An established resident in south-east England, recently extending its range westward and northward, and consequently records have not been included in the current report from the southern and eastern seaboard counties between VC's **3** & **27**, and inland to VC's **12**, **16** & **17**. The following records are probably the result of internal range expansion, although fresh immigration from the continent is a possibility, particularly for the more coastal records.
W. CORNWALL [**1**] Church Cove, The Lizard, July (1) (Tunmore, 2012); IOS: Longstone, St Mary's, 20.8 (Scott, 2012a). E. CORNWALL [**2**] Polbathic, 18.9 (JCN per LACT).

1397a ***Diplopseustis perieresalis*** **(Walk.) [I/In]**
S. HAMPSHIRE [**11**] Southsea, 28.7, at light (JRL per TJN). SURREY [**17**] Putney, 15.9 (per MSP); Wisley, Sep/Oct, 2+ indoors (probably a number more), associated with *Trachycarpus* spp. (A. Halstead via AK, per MSP). BEDFORDSHIRE [**30**] Biggleswade, 3.8, 15.9 (L. Burgess per DVM); Upper Stondon, 21.10, indoors (J. England per DVM); first VC records. S.E. YORKSHIRE [**61**] Rawcliffe, 19.12, 20.12, indoors probably associated with *Phoenix canariensis*; first VC records (AK per MSP).

1400 ***Antigastra catalaunalis*** **(Dup.) [I]**
Total no. reported: **23**
By vice-county: **1** (15), **13** (3), **15** (1), **37** (1), **47** (1), **H6** (2).
W. CORNWALL [**1**] Buryas Bridge, 29.9 (LHO); Crowlas, 3.10 (MT); IOS: St Agnes, 1.10 (Scott, 2012a); IOS: Longstone, St Mary's, 2.10 - 7.10 (6) (Scott, 2012a); IOS: St Mary's (away from Longstone), 3.10 (4) (per M. Scott); Church Cove, 3.10 (Tunmore, 2012); Hayle, 3.10 (by day) (MT). W. SUSSEX [**13**] Bracklesham, 3.10, 9.10 (DL per CRP); Walberton, 4.10 (JTR per CRP). E. KENT [**15**] Dymchurch, 21.8 (JEO). WORCESTERSHIRE [**37**] Pendock, 2.10, first VC record (R. Clements). MONTGOMERYSHIRE [**47**] Middletown, 3.10, new to Wales (D. Boyes per PRW).
WATERFORD [**H6**] Brownstown Head, 3.10 (Bryant & Walsh, 2012); Tramore, 30.9 (Bryant & Walsh, 2012).
[A record from Icklesham [**14**] on 3.6 (Hunter, 2012) is considered to be unreliable.]

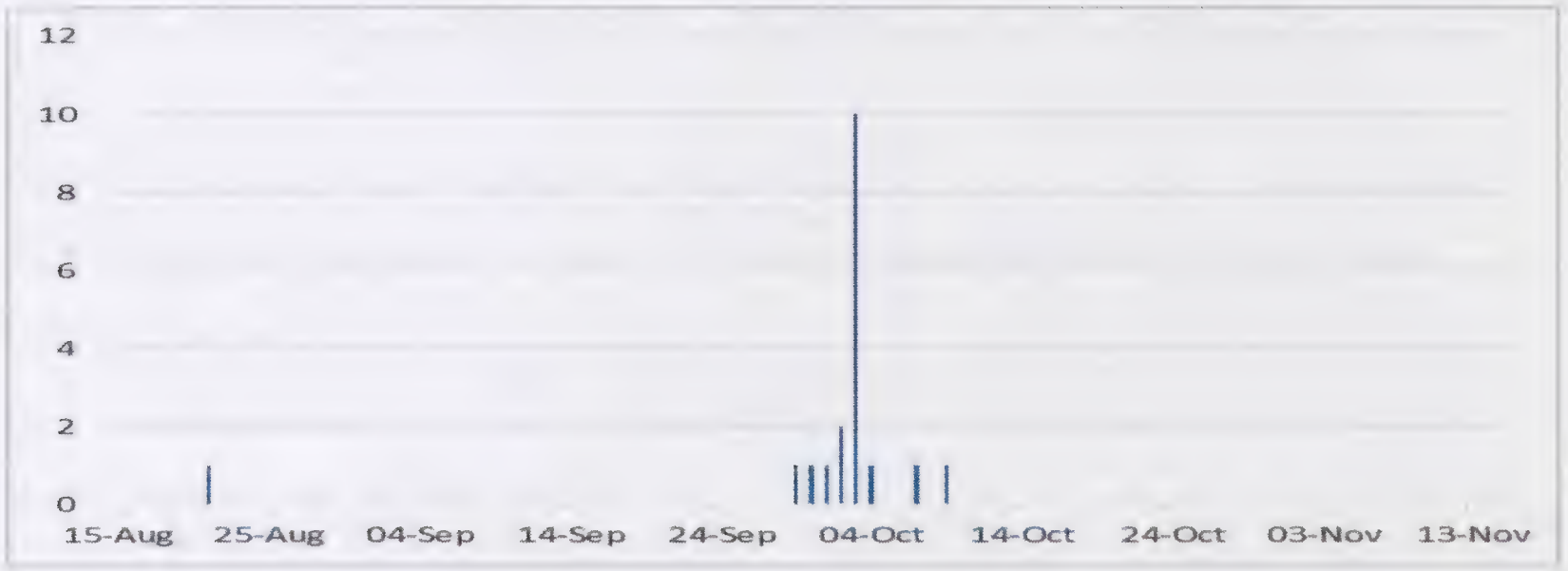

Figure 4. *Antigastra catalaunalis* occurrence pattern in 2011 (dated records only).

1401 ***Maruca vitrata*** **(Fabr.) [In][I]**
W. SUSSEX [**13**] Climping, nr. Littlehampton, 2.9, first VC record (THF, MAS).

1403 ***Diasemiopsis ramburialis*** **(Dup.) [I]**
Total no. reported: **20**
By vice-county: **1** (11), **9** (4), **11** (3), **12** (1), **73** (1).
W. CORNWALL [**1**] Buryas Bridge, 3.10 (LHO); Cury, 28.9 (FTJ); IOS: St Agnes, 30.9 (2), 2.10 (Scott, 2012a); IOS: St Mary's, 30.9 (3), 2.10, 3.10 (Scott, 2012a); Land's End, 29.9-2.10 (1) (GBH). DORSET [**9**] Portland, 3.10 (2), 12.10 (Cade, 2012); Studland, 30.9 (DCGB). S. HAMPSHIRE [**11**] Ashurst, 5.11 (KG per TJN); Hurn, 13.11 (MJ per TJN); Wickham Common, 12.11 (K. Coker per TJN). N. HAMPSHIRE [**12**] Weston Colley, 4.11 (DGG per TJN). KIRKCUDBRIGHTSHIRE [**73**] Milton, 4.10, first VC record (A. White per KAN).

1403a ***Duponchella fovealis*** **(Zell.) [I][In]**
E. KENT [**15**] Lydd, 6.7, indoors (KR). HEREFORDSHIRE [**36**] Hereford, 25.6, inside supermarket, first VC record (R. Hemming).

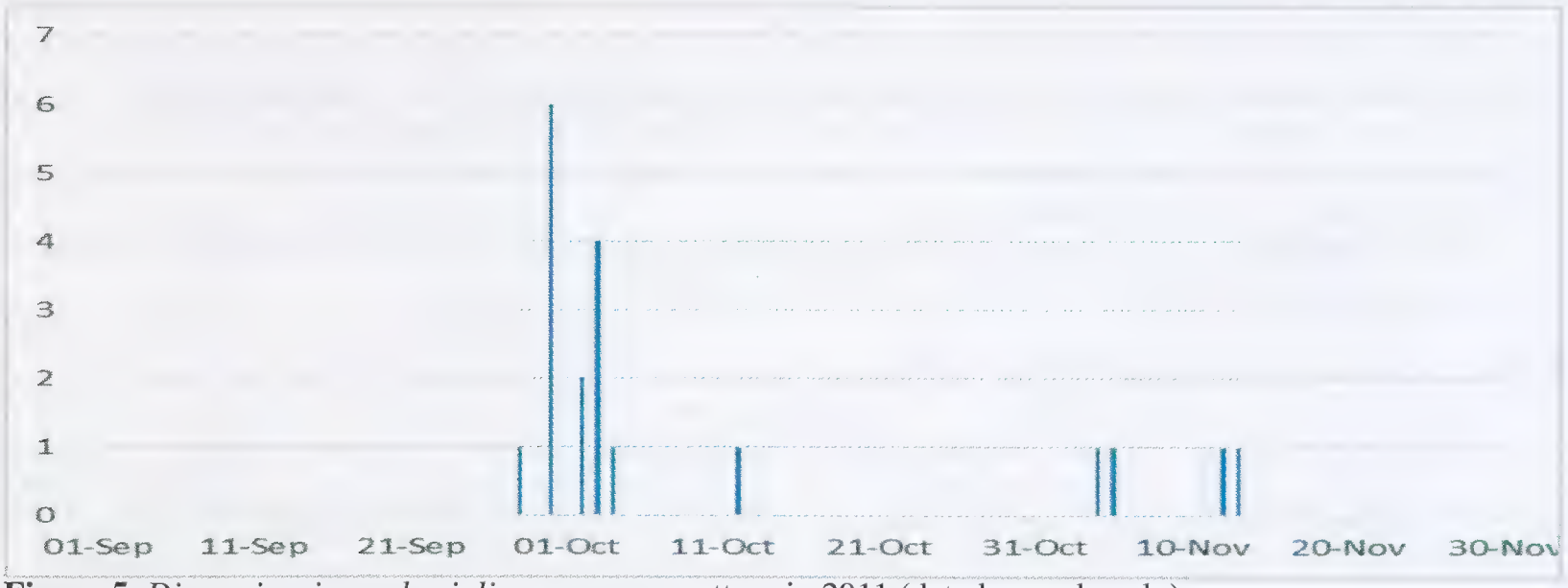

Figure 5. *Diasemiopsis ramburialis* occurrence pattern in 2011 (dated records only).

1404 ***Spoladea recurvalis* (Fabr.) [I]**
Total no. reported: 61
By vice-county: **1** (16), **2** (1), **3** (1), **9** (6), **11** (2), **13** (2), **14** (2), **15** (1), **18** (1), **25** (1), **28** (1), **37** (1), **45** (4), **47** (1), **48** (2), **61** (1), **71** (5), **73** (1), **89** (1), **H3** (1), **H6** (2), **H12** (7), **H31** (1).
W. CORNWALL [**1**] IOS: St Mary's, 2.10, 3.10 (4) (Scott, 2012a); Maenporth, 3.10 (3), 29.10 (Davis, 2012); The Lizard, 3.10 (5), 4.10 (2) (Tunmore, 2012). E. CORNWALL [**2**] Grampound, 10.10, by day (MT). S. DEVON [**3**] Hennock, 13.10 (BBe per BPH). DORSET [**9**] Portland, 3.10, 7.10, 12.10 (Cade, 2012); West Bexington, 3.10 (2) (Eden, 2012); Weymouth, 1.10 (PH). S. HAMPSHIRE [**11**] Holbury, 3.10 (KJP per TJN); Sandy Point, Hayling Island, 29.10 (Johnson & Phillips, 2012); first VC records. W. SUSSEX [**13**] Bracklesham, 3.10 (DL per CRP); Walberton, 11.10 (JTR per CRP). E. SUSSEX [**14**] Bexhill, 5.10, 27.10 (KNA per CRP). E. KENT [**15**] Pegwell, 12.10 (Solly *et al.*, 2012). S. ESSEX [**18**] Woodford Green, 8.10 (RB). E. SUFFOLK [**25**] Landguard, 11-12.10 (Odin, 2012), first VC record. W. NORFOLK [**28**] Holme, 13.10, first VC record (PC). WORCESTERSHIRE [**37**] Abberton, 10.10, first VC record (G. Peplow, in Langmaid & Young, 2012). PEMBROKESHIRE [**45**] Haverfordwest, 13.10 (R. Royle); North Haven, Skomer Island, 30.9 (2), 3.10 (D. Boyle); new to Wales, first VC records. MONTGOMERYSHIRE [**47**] Commins Coch, 2.10, first VC record (PRW). MERIONETHSHIRE [**48**] Trawscoed, 2.10 (ANG); Tal y Bont, 8.10 (Hicks & Bantock, 2012); first VC records. S.E. YORKSHIRE [**61**] Easington, 4.10, first VC record (MFS per CHF). ISLE OF MAN [**71**] Island total, 1.10 (5) (per MT). KIRKCUDBRIGHTSHIRE [**73**] Milton, 1.10, first VC record (A. White per KAN). E. PERTHSHIRE [**89**] Piper's Croft, Killiecrankie, 1.10, first VC record (J. Thorpe, in Langmaid & Young, 2012).
W. CORK [**H3**] Cape Clear Island, 11.10, by day (P. O'Keeffe, in Walsh *et al.*, *in prep.*). WATERFORD [**H6**] Brownstown Head, 1-2.10 (Bryant & Walsh, 2012); Tramore, 8.10 (Bryant & Walsh, 2012). WEXFORD [**H12**] Ballinoulart, 2.10 (MO'D); Barnland, 1.10 (2) (J. Whelehan); Kilpatrick, 1.10 (4) (MO'D). LOUTH [**H31**] Ballagan Point, 3.10 (D. Hodgers). New to Ireland.

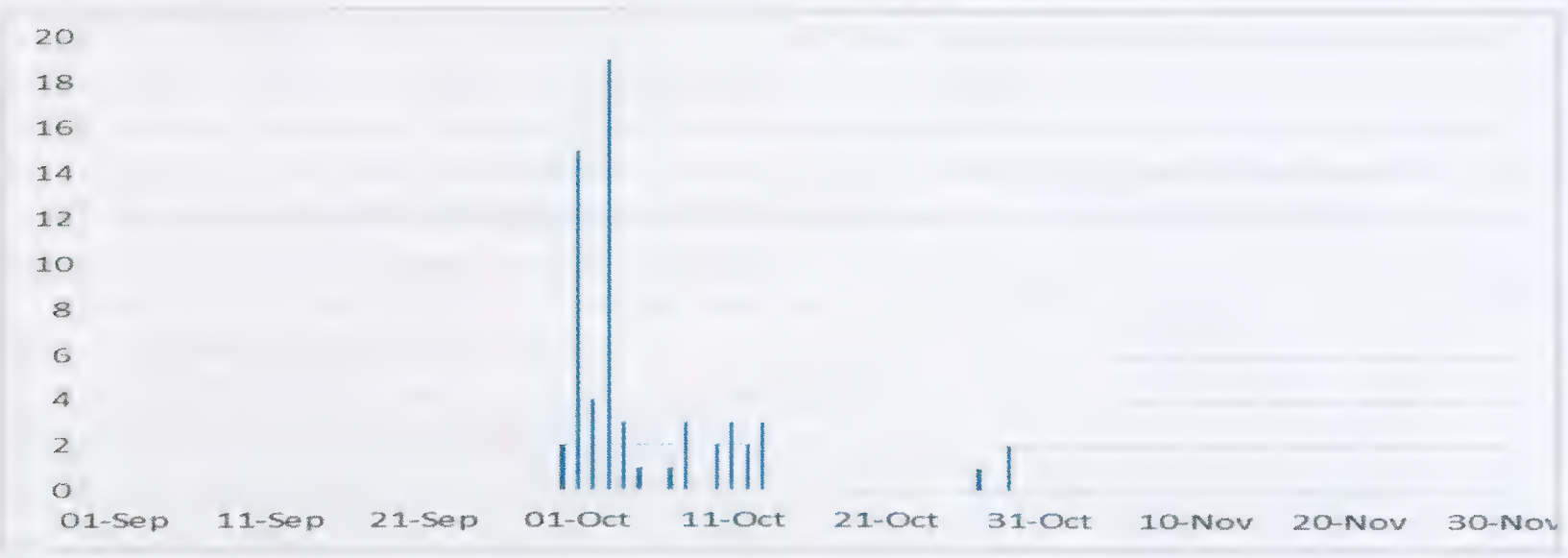

Figure 6. *Spoladea recurvalis* occurrence pattern in 2011.

1409a ***Cydalima perspectalis* (Walk.) [In]**
W. KENT [**16**] Barnehurst, 22.9, first VC record (TS, in Langmaid & Young, 2012). S. ESSEX [**18**] Woodford Green, 22.6 – 20.7, 28.9 – 4.10 (17) (RB). HERTFORDSHIRE [**20**] Gilstone Park, 25.5, larva (per MSP).

1410 ***Agrotera nemoralis*** **(Scop.) [R][V/I]**
Extralimital records of possible immigrants.
E. CORNWALL [**2**] Mount Edgcumbe, 3.6 (JCN per LACT).

1435 ***Acrobasis tumidana*** **(D. & S.) [I]**
Total no. reported: **14**
By vice-county: **3** (1), **9** (1), **11** (3), **12** (2), **15** (6), **25** (1).
S. DEVON [**3**] Brixham, 30.8 (BBe per BPH). DORSET [**9**] Pennsylvania Castle, Portland, 26.6 (Cade, 2012). S. HAMPSHIRE [**11**] Lymington, 27.6 (PD per TJN); Southsea, 3.9 (JRL per TJN); Stubbington, 1.8 (DH per TJN). N. HAMPSHIRE [**12**] Deadwater Valley, 11.7 (2) (NM per TJN). E. KENT [**15**] Dungeness, 28.6, 2.8 (Clancy, 2012a); Harty, Sheppey, 1.7 (MJH per IDF); Iwade, 2.9 (IC per IDF); Kingsdown, 7.7, 9.9 (Jarman & Morris, 2012). E. SUFFOLK [**25**] Ipswich, 15.8 (NS per AWP).

1441 ***Oncocera semirubella*** **(Scop.) [R][V/I]**
Coastal/extralimital records of probable immigrant/vagrant examples.
E. SUFFOLK [**25**] Dunwich Heath, 15.8 (Moore & Deans, 2012).

1448a ***Elegia fallax*** **(Stdgr.) [I]**
S. HAMPSHIRE [**11**] Stubbington, 24.4, new to Britain (Houghton, 2011).

1449 ***Elegia similella*** **(Zinck.) [R][I/V]**
Coastal records away from known populations that may relate to immigrants.
E. KENT [**15**] Greatstone, 28.6 (BBa).

1450 ***Ortholepis betulae*** **(Goeze) [R][I/V]**
Coastal records away from known populations that may relate to immigrants.
E. SUFFOLK [**25**] Bawdsey, 4.6 (Deans, 2012); Sizewell, 4.6 (2) (Deans, 2012); first modern VC records.

1451a ***Etiella zinckenella*** **(Treits.) [I][In]**
W. CORNWALL [**1**] Maenporth, 9.10 (GD). DORSET [**9**] Tincleton, 3.10 (R. Cottle), first VC record. W. SUSSEX [**13**] Bracklesham, 3.10 (D. Lee), first VC record. N.W. YORKSHIRE [**65**] Hutton Conyers, 4.10, first VC record (CHF).

1486 ***Apomyelois bistriatella subcognata*** **(Ragonot) [R][I/V]**
Coastal/extralimital records that may relate to immigrant examples.
W. CORNWALL [**1**] IOS: Longstone, St Mary's, 12.7 (Scott, 2012a).

1461 ***Assara terebrella*** **(Zinck.) [R][I/V]**
Coastal records away from habitat that may relate to immigrant examples.
E. KENT [**15**] Dymchurch, 1.8 (JEO); Kingsdown, 30.6, 2.8 (Jarman & Morris, 2012).

1465 ***Nephopterix angustella*** **(Zell.) [R][V/I]**
Extralimital/coastal records with a potentially immigrant origin.
DORSET [**9**] West Bexington, 1.10 (MJD *et al.*).

1467 ***Ancylosis oblitella*** **(Dup.) [R][I/V]**
Extralimital/coastal records with a potentially immigrant origin.
W. CORNWALL [**1**] IOS: St Mary's, 2.10, 4.10 (Scott, 2012a). DORSET [**9**] West Bexington, 1.10 (MJD *et al.*).

1479 ***Plodia interpunctella*** **(Hb.) [In]**
W. CORNWALL [**1**] IOS: St Agnes, 11.10 (Scott, 2012a).

1480 ***Homoeosoma nebulella*** **(D. & S.) [R][V/I]**
Coastal/extralimital records that may refer to immigrants.
S. DEVON [**3**] Thatcher Point, Torquay, 26.5 (AHD per BPH).

PTEROPHORIDAE

1492 ***Oxyptilus laeta*** **(Zell.) [I]**
Total no. reported: **38**
By vice-county: **1** (12), **2** (1), **3** (9), **6** (1), **7** (1), **9** (4), **11** (1), **33** (1), **34** (1), **38** (1), **43** (1), **45** (1), **48** (2), **74** (1), **H12** (1).

W. CORNWALL [**1**] Cury, 27.6 (FTJ); IOS: St Agnes, 15.10 (Scott, 2012a); IOS: St Mary's, 28.6, 30.6, 1.7, 2.7 (3), 3.7, 10.7 (Scott, 2012a); The Lizard, 28.6 (SO), 2.7 (Tunmore, 2012). E. CORNWALL [**2**] Penlee Battery, 4.7, by day (J. Cook per LACT). S. DEVON [**3**] Bere Alston, 30.6 (P. Barden); Berry Head, 11.7 (3), 12.7 (2) (RJH, SDB); Exmouth, 2.7 (G. Wisdom per RFM); Prawle Point, 3.7 (2) (P. Barden). N. SOMERSET [**6**] Weston-super-Mare, 1.8 (P. Bowyer per DJLA). N. WILTSHIRE [**7**] Covingham, 9.7, first VC record (W. Clinch, in Langmaid & Young, 2012). DORSET [**9**] Portland Bird Observatory, 27.6 (3), 1.7 (Cade, 2012). S. HAMPSHIRE [**11**] Portsmouth, 30.6 (IRT per TJN). E. GLOUCESTERSHIRE [**33**] Cheltenham, 30.6, first VC record (M. Hollands, in Langmaid & Young, 2012). W. GLOUCESTERSHIRE [**34**] Forest of Dean, 2.7, first VC record (GHJM, in Langmaid & Young, 2012). WARWICKSHIRE [**38**] Bishop's Hill, 15.7, first VC record (A. Prior). RADNORSHIRE [**43**] Rhos yr Hafod, Elan, 3.7, first VC record (P. Clarke, in Langmaid & Young, 2012). PEMBROKESHIRE [**45**] Rhigian, 27.6, first VC record (Warren, 2012). MERIONETHSHIRE [**48**] Derwgoed, 27.6 (GMT per ANG); Machynlleth, 3.7 (DT per ANG); first VC records. WIGTOWNSHIRE [**74**] Barsalloch Point, 8.7, first VC record (R. & B. Mearns, in Langmaid & Young, 2012).
WEXFORD [**H12**] Kilpatrick, 27.6, new to Ireland (MO'D, det. KGMB).

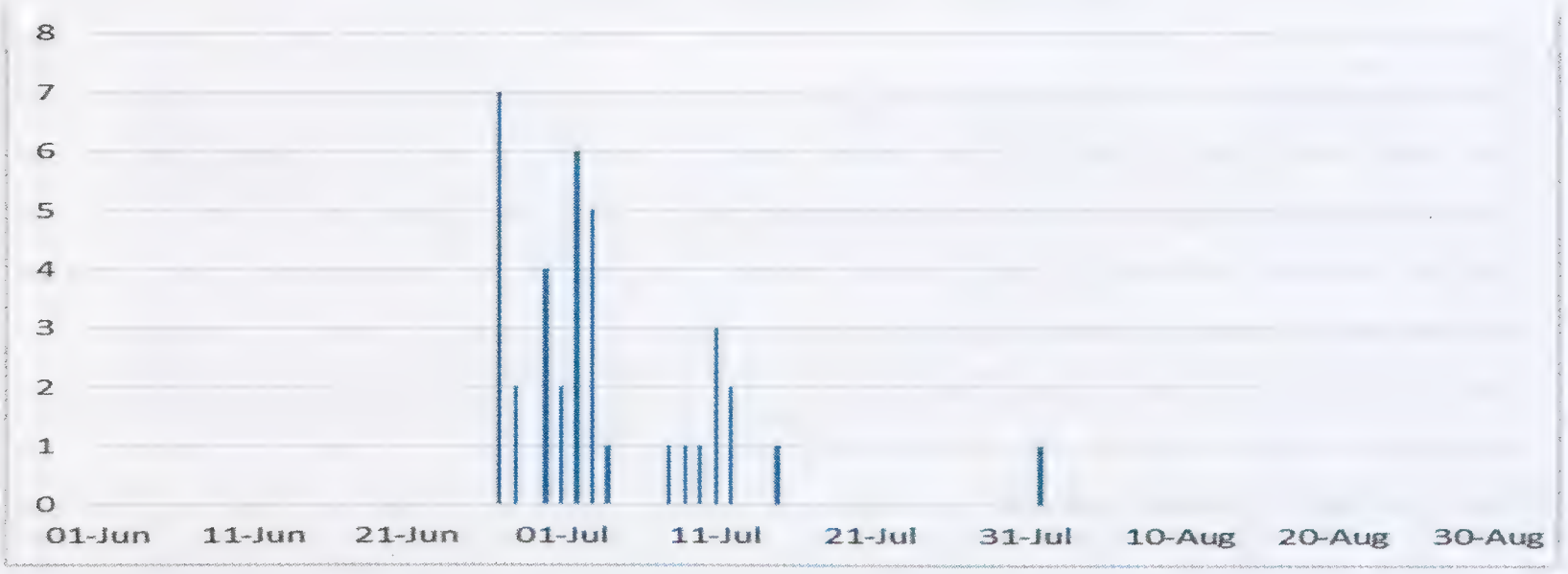

Figure 7. *Oxyptilus laeta* occurrence pattern in 2011 (excluding October record).

PAPILIONIDAE

1539 ***Papilio machaon*** **(L.) Swallowtail [R][I][In?]**
The following records are all likely to relate to continental race *gorganus* (Fruhs.).
E. KENT [**15**] Pegwell, 15.9 (Solly *et al.*, 2012); Sandwich Bay, 15.9 (Hodgson & Beugg, 2012).

1540 ***Iphiclides podalirius*** **(L.) Scarce Swallowtail [I][In]**
ISLE OF WIGHT [**10**] Wroxhall, 31.7 (Knill-Jones, 2012).

PIERIDAE

1550 ***Pieris rapae*** **(L.) Small White [R][I]**
High coastal counts potentially relating to primary migrants.
S.E. YORKSHIRE [**61**] Spurn, 15.7 (500), 19.7 (1300) (Spence, 2012).

LYCAENIDAE

1567 ***Lampides boeticus*** **(L.) Long-tailed Blue [I][In]**
W. CORNWALL [**1**] IOS: St Agnes, 12.10, 27.10 (Scott, 2012a); IOS: St Mary's, 12.10, 28.10 (Scott, 2012a). DORSET [**9**] Easton, Portland, 28.9 (GW). E. SUFFOLK [**25**] Lowestoft, 11.10 (per MT).

NYMPHALIDAE

1594 ***Nymphalis polychloros*** **(L.) Large Tortoiseshell [I][In?][FR][MC?]**
W. CORNWALL [**1**] Coverack, 28.6 (Tunmore, 2012); IOS: St Mary's, 13.7 (Scott, 2012a). ISLE OF WIGHT [**10**] Island total: six sightings (undated) (Knill-Jones, 2012).

1596 ***Nymphalis antiopa*** **(L.) Camberwell Beauty [I][In?]**
S. ESSEX [**18**] Rainham Marshes, 19.3 (D. Preston).

1603 ***Issoria lathonia*** **(L.) Queen of Spain Fritillary [I][MC?][In?]**
E. SUFFOLK [**25**] Dunwich, 3.7 (J. Dowding, in Moore & Deans, 2012).
WATERFORD [**H6**] Carrickavrantry, 18.10, first VC record (Bryant & Walsh, 2012).

1608 ***Argynnis paphia*** **(L.) Silver-washed Fritillary [R][I/V]**
Coastal records away from suitable breeding habitat that may relate to immigrants.
E. KENT [**15**] Sandwich Bay, 5.7 (Hodgson & Beugg, 2012).

DANAIDAE

1630 ***Danaus plexippus*** **(L.) Monarch [I][In]**
DORSET [**9**] Ringstead, 28.9 (S. Cunningham, S. Austin). S. ESSEX [**18**] Bradwell-on-sea, 3.8 (Dewick, 2012).

Unlisted ***Danaus chrysippus*** **(L.) Plain Tiger [In?]**
ISLE OF WIGHT [**10**] Yarmouth, 21.7 (Knill-Jones, 2012).

LASIOCAMPIDAE

1639 ***Dendrolimus pini*** **(L.) Pine-tree Lappet [I][In/MC/R]**
Records away from the resident population in VC**96**.
DORSET [**9**] Portland, 22.8, first VC record (BFS).

DREPANIDAE

1649 ***Drepana curvatula*** **(Borkh.) Dusky Hook-tip [I]**
E. SUSSEX [**14**] Icklesham, 13.8 (Hunter, 2012); Peacehaven, 16.8 (Pratt, 2012). E. KENT [**15**] Dungeness, 7.5 (2) (JHC); Dymchurch, 7.5 (JEO); Lydd-on-sea, 21.4 (DB); Pegwell, 13.8 (Solly *et al.*, 2012); Sandwich Bay Bird Observatory, 10.8 (Hodgson & Beugg, 2012).

GEOMETRIDAE

1664 ***Aplasta ononaria*** **(Fuessl.) Rest Harrow [R][I][V]**
Records away from known populations in VC**15**.
W. KENT [**16**] Grain, 5.8 (AGJB). E. SUFFOLK [**25**] Bawdsey, 5.8 (Deans, 2012).

1678 ***Cyclophora puppillaria*** **(Hb.) Blair's Mocha [I][MC]**
All received/sourced records are listed, although some of these may be the result of localised breeding rather than primary immigration, particularly in VC's **11** & **13**.
Total no. reported: **163**
By vice-county: **1** (7), **3** (2), **7** (1), **9** (2), **10** (3), **11** (27), **12** (2), **13** (114), **14** (1), **22** (1), **24** (2), **H6** (1).
W. CORNWALL [**1**] IOS: St Mary's, 30.9 (2), 1.10, 3.10 (Scott, 2012a); Maenporth, 11.10, 31.10 (Davis, 2012); Mullion, 1.10 (B. Jupp). S. DEVON [**3**] Teignmouth, 1.10 (2) (RFM per BPH). N. WILTSHIRE [**7**] Highworth, 4.10 (SN). DORSET [**9**] Studland, 1.10 (DCGB); West Bexington, 29.9 (DF). ISLE OF WIGHT [**10**] Bonchurch, 1.10, 3.10 (JH); Totland, 3.10 (SAK-J per TJN). S. HAMPSHIRE [**11**] Burton, 19.7 (2), 21.10 (J. Southwood per TJN); Lovedean, 20.7 (A. Jafkins per TJN); Sandy Point, Hayling Island, 26.7, 3.10 (2) (AJ per TJN); Hayling Island total: July (2), September (10), October (11) (Johnson & Phillips, 2012). N. HAMPSHIRE [**12**] Bishops Sutton, 28.10 (PT per TJN); Kempshott, 27.10 (GAH per TJN). W. SUSSEX [**13**] Chichester, 29.7 (per IL); Ferring, 5.5, 28.6 (2), 22.7 (5), 26.7 (6), 11.8, 17.8, 23.8 (5), 15.9 (3), 26.9 (9), 27.9 (13), 28.9 (31), 2.10 (12), 3.10 (4), 12.10 (8), 29.10, 16.11 (THF); Middleton-on-sea, 19.5, 19.8, 21.8 (2), 1.9, 3.10, 13.10 (IDM, in Clancy 2012b); Pagham Harbour, 20.4, 26.7 (IL); Portslade, 5.10 (D. Perry). E. SUSSEX [**14**] Peacehaven, 3.10 (Pratt, 2012). BERKSHIRE [**22**] Wokingham, 2.10 (RH). BUCKINGHAMSHIRE [**24**] Bernwood Forest, 4.10 (D. Wilton); Chorleywood, 2.10 (R. Ellis); first VC records.
WATERFORD [**H6**] Great Newtown Head, 30.6, first VC record (Bryant & Walsh, 2012).

1678a ***Cyclophora ruficiliaria*** **(H.-S.) Jersey Mocha [I][MC]**
Records unassociated with the breeding colony near Falmouth in VC**1**.
S. DEVON [**3**] Goat Island, nr. Seaton, 30.7, first VC record (BPH). ISLE OF WIGHT [**10**] Bonchurch, 29.4, 19.8 (JH). SURREY [**17**] Thames Ditton, 29.8 (BRD per GAC).

1684 ***Scopula nigropunctata*** **(Hufn.) Sub-angled Wave [R][I][V]**
Records away from known populations in VC**15** that may relate to immigrants.
E. KENT [**15**] Dungeness, 27.6 (PB); Greatstone, 27.6 (BBa).

1696 ***Idaea ochrata*** **(Scop.) Bright Wave [R][I/V]**
Records away from the known populations in VC**15**.
DORSET [**9**] Portland Bird Observatory, 5.7 (Cade, 2012). S. HAMPSHIRE [**11**] Mengham, Hayling Island, 27.6 (Johnson & Phillips, 2012). W. SUSSEX [**13**] Bracklesham, 20.7, first VC record (DL per CRP).

1699 ***Idaea rusticata*** **(D. & S.) Least Carpet [R][I][V]**
Coastal/extralimital records of possible immigrant examples.
W. CORNWALL [**1**] Maenporth, 4.7 (Davis, 2012).

1714 ***Idaea degeneraria*** **(Hb.) Portland Ribbon Wave [R][I/V]**
Coastal records away from VC's **3**, **9** & **10** that may relate to immigrants, vagrants or undiscovered colonies.
W. CORNWALL [**1**] Falmouth, 1.9 (4) (SO); Maenporth, 29.5 (Davis, 2012). E. CORNWALL [**2**] Downderry, 2.10 (JCN per LACT). N. SOMERSET [**6**] Bristol, 2.6 (D. Whittle). S. HAMPSHIRE [**11**] Titchfield, 31.8 (DH). W. SUSSEX [**13**] Storrington, 19.9 (RP per CRP). E. SUSSEX [**14**] Peacehaven, 18.5 (Pratt, 2012).

1741 ***Costaconvexa polygrammata*** **(Borkh.) Many-lined [I][FR]**
DORSET [**9**] West Bexington, 29.9 (DF). BEDFORDSHIRE [**30**] Eaton Ford, 7.5, first VC record (AL).

1769a ***Thera vetustata*** **(D. & S.) Fir Carpet [I]**
W. SUSSEX [**13**] Climping, 9.10, first VC record (M. Sennitt per CRP).

1771a ***Thera cupressata*** **(Geyer) Cypress Carpet [R][V/I]**
Extralimital coastal records that may relate to primary immigrants or vagrants.
E. NORFOLK [**27**] Bradwell, 4.10, first VC record (KK).

1918 ***Selenia lunularia*** **(Hb.) Lunar Thorn [R][I/V]**
Coastal records of possible immigrant specimens, the majority of these away from suitable habitat and/or relating to second-brood examples.
E. KENT [**15**] Kingsgate, 2.8 (Solly *et al.*, 2012).

1945 ***Cleorodes lichenaria*** **(Hufn.) Brussels Lace [R][I]**
Extralimital, coastal records likely to involve immigrants.
E. KENT [**15**] Pegwell, 2.8 (Solly *et al.*, 2012). S. ESSEX [**18**] Thundersley, 29.6 (D. Down).

1965a ***Pseudocoremia suavis*** **(Butler) Common Forest Looper [In]**
W. CORNWALL [**1**] Greatwork, 6.6 (G. Littler per TJ).

SPHINGIDAE

1973 ***Acherontia atropos*** **(L.) Death's-head Hawk-moth [I][In]**
Total no. adults reported: **18**
By vice-county: **1** (3), **2** (1), **3** (3), **9** (2), **11** (2), **12** (1), **14** (2), **39** (1), **95** (1), **H4** (1), **H39** (1).
W. CORNWALL [**1**] Church Cove, 13.6 (Tunmore, 2012); IOS: St Mary's, 14.10 (Scott, 2012a); Land's End, 1.10 (GBH). E. CORNWALL [**2**] Torpoint area, September, found moribund (per TJ). S. DEVON [**3**] Devonport, 15.9, found by day (per BPH); Ogwell, 12.9, found by day (per BPH); Plymouth, 3.9, found by day (per BPH). DORSET [**9**] Arne, 4.10, found by day (per MT); Upwey, 11.11 (PH per LJH). S. HAMPSHIRE [**11**] Lymington, 7.9 (Z. Ward per TJN); Southsea, 24.9 (D. Thomas per TJN). N. HAMPSHIRE [**12**] Leckford, 28.5, adult found indoors (per TJN). E. SUSSEX [**14**] East Dean, 12.12, found dead (DCJ per CRP); Hastings, 17.10, inside railway station (TP per CRP). E. NORFOLK [**27**] Acle/Hemsby area, 18.8, larva (S. Shaw). STAFFORDSHIRE [**39**] Stone, 16.7, found by day (J. Byrne per DWE). MORAYSHIRE [**95**] Elgin, 10.10, found moribund, first VC record (C. Fairley per M. Taylor). MID-CORK [**H4**] Douglas, 9.10 (L. Ruddock). ANTRIM [**H39**] Larne, 14.10 (Walsh *et al.*, *in prep.*).

1985 ***Daphnis nerii*** **(L.) Oleander Hawk-moth [I][In?]**
DORSET [**9**] West Bexington, 20.9 (Eden, 2012).

1986 ***Hyles euphorbiae*** **(L.) Spurge Hawk-moth [I][In]**
E. KENT [**15**] Kingsgate, 20.6 (Solly *et al.*, 2012); Pegwell, 23.6 (Solly *et al.*, 2012); Saltwood, 10.7 (P. Howe). E. SUFFOLK [**25**] Landguard, 6.7 (Odin, 2012).

1987 ***Hyles gallii*** **(Rott.) Bedstraw Hawk-moth [I][R]**
All received/sourced records are listed, although some of these may be the result of localised breeding rather than primary immigration.
Total no. adults reported: **36**
By vice-county: **9** (2), **13** (1), **15** (4), **17** (1), **18** (1), **27** (5), **28** (2), **32** (1), **38** (1), **39** (2), **54** (1), **60** (1), **61** (9), **64** (1), **67** (1), **110** (1), **112** (2).

DORSET [**9**] Portland Bird Observatory, 20.7, 21.7 (Cade, 2012). W. SUSSEX [**13**] Ringmer, 15.7 (AB per CRP). E. KENT [**15**] Dungeness, 27.7 (PB); Faversham, 14.7, 18.7 (DWJ per IDF); St Margaret's Bay, 26.7 (Jarman & Morris, 2012). SURREY [**17**] Holmbury St Mary, 3.6 (per MT). S. ESSEX [**18**] Bradwell-on-sea, 2.8 (Dewick, 2012). E. NORFOLK [**27**] Wells area, 13.5 (2), 14.5, 20.5, 22.7 (R. Pitman, E. Stubbings). W. NORFOLK [**28**] Holme/Titchwell area, 31.7, 2.8 (S. Barker). NORTHAMPTONSHIRE [**32**] Woodnewton, 30.7 (N. Smith). WARWICKSHIRE [**38**] Studley, 13.7 (C. Smith). STAFFORDSHIRE [**39**] Knightley Grange, 2.8, 3.8 (MRG per DWE). N. LINCOLNSHIRE [**54**] Gibraltar Point, 1.8 (Bagworth, 2012). N. LANCASHIRE [**60**] Heysham, 28.7 (DJH per SMP). S.E. YORKSHIRE [**61**] Easington, 29.9 (MFS per CHF); Kilnsea, 17.7, 20.7, 22.7, 26.7, 29.7 (2) (BRS, PAC per CHF); Spurn, 13.7, 2.8, 16.9 (larva), 17.9 (larva) (BRS per CHF). MID-W. YORKSHIRE [**64**] Bellflask, 4.8 (B. Morland per CHF). S. NORTHUMBERLAND [**67**] Tynemouth, 15.7 (Tams, 2012). OUTER HEBRIDES [**110**] South Glendale, South Uist, 28.7, first VC record (Johnson, 2012). SHETLAND ISLANDS [**112**] Lerwick, 12.7 (anon.); Scatness, 18.7 (anon.).

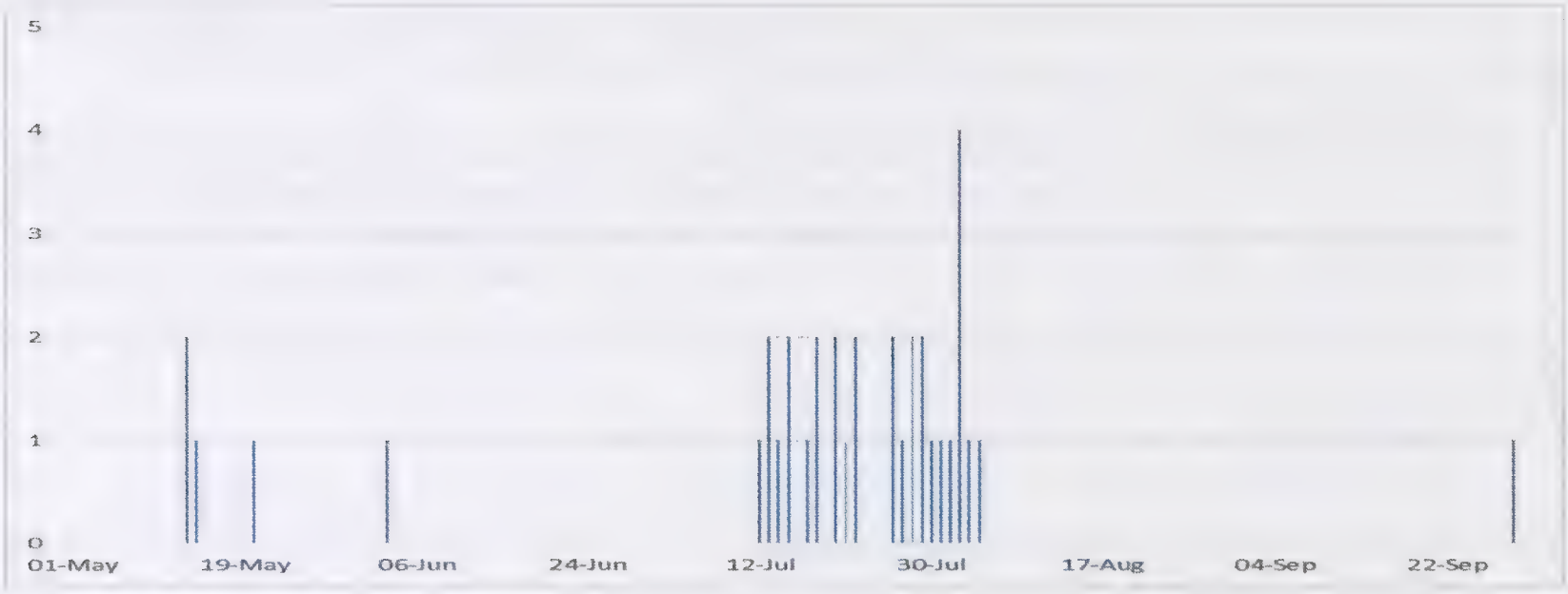

Figure 8. *Hyles gallii* occurrence pattern in 2011 (adult records only).

1990 ***Hyles livornica*** **(Esp.) Striped Hawk-moth [I]**
DORSET [**9**] Preston, 27.6 (RL). S. HAMPSHIRE [**11**] Northney, Hayling Island, 7.4 (Johnson & Phillips, 2012). E. KENT [**15**] Pegwell, 26.6 (Solly *et al.*, 2012). HUNTINGDONSHIRE [**31**] Earith, 5.7 (D. Griffiths per BD). CHESHIRE [**58**] Higher Poynton, 19.7 (SHH). S.E. YORKSHIRE [**61**] Tophill Low, 15.7 (R. Sears *et al.* per CHF). OUTER HEBRIDES [**110**] South Glendale, South Uist, 24.10, first VC record (Johnson, 2012).
KERRY [**H1**] Kilgarvan, 25.4 (P. Strickland). WATERFORD [**H6**] Brownstown Head, 15.4 (Bryant & Walsh, 2012). GALWAY [**H17**] Annaghdown, 29.7 (IR).

1993 ***Hippotion celerio*** **(L.) Silver-striped Hawk-moth [I]**
W. CORNWALL [**1**] Lizard village, 20.11 (T. Thirlaway). N. SOMERSET [**6**] Walton Common, nr. Clevedon, 5.5 (PDC *et al.*). DORSET [**9**] Alderholt, 14.11 (TM). W. SUSSEX [**13**] Bracklesham, 3.11 (DL per CRP). E. SUFFOLK [**25**] Hollesley, 15.10 (R. Watson).

NOTODONTIDAE

2002 ***Notodonta tritophus*** **(D. & S.) Three-humped Prominent [I]**
E. KENT [**15**] Dungeness, 2.8 (JP per IDF); Dymchurch, 2.8 (JEO).

2016 ***Gluphisia crenata*** **(Esp.) Dusky Marbled Brown [I]**
E. KENT [**15**] Dungeness, 26.6 (DW).

2018 ***Clostera anachoreta*** **(D. & S.) Scarce Chocolate-tip [I][FR][MC?]**
Excluding records from the Dungeness area in VC**15** where a breeding colony is probably extant.
E. KENT [**15**] Pegwell, 11.8 (Solly *et al.*, 2012); Ramsgate, 22.4, 5.7 (Solly *et al.*, 2012).

LYMANTRIIDAE

2031 ***Leucoma salicis*** **(L.) White Satin [R][I/V]**
Extralimital, coastal records of possible immigrants.
S. NORTHUMBERLAND [**67**] Ridsdale, 28.7 (I. Fisher per TJT); Tynemouth, 11.7, 3.8 (Tams, 2012).

2034 ***Lymantria dispar*** **(L.) Gypsy Moth [I][FR][In]**
Not including records associated with introduced resident populations in the London area and on the Dorset/Hampshire border.
E. SUFFOLK [**25**] Minsmere, 25.8 (Harvey & Higgott, 2012).

ARCTIIDAE

2041 ***Pelosia muscerda*** **(Hufn.) Dotted Footman [R][I][V]**
Records away from suitable habitat in VC**27**.
W. SUSSEX [**13**] Middleton-on-sea, 25.7 (IDM per CRP). E. SUSSEX [**14**] Icklesham, 2.8 (Hunter, 2012). E. KENT [**15**] Pegwell, 11.7, 25.7 (Solly *et al.*, 2012). E. SUFFOLK [**25**] Ipswich, 4.8 (NS).

2045 ***Eilema caniola*** **(Hb.) Hoary Footman [R][I/V]**
Coastal records considered most likely to relate to immigrant examples.
DORSET [**9**] West Bexington, 29.9 (DF).

2051 ***Lithosia quadra*** **(L.) Four-spotted Footman [R][I]**
Extralimital, coastal records of probable immigrants.
N. SOMERSET [**6**] Weston-super-Mare, 25.9 (P. Bowyer). S. HAMPSHIRE [**11**] Northney, Hayling Island, 28.9 (Johnson & Phillips, 2012). W. SUSSEX [**13**] Bracklesham, 24.9 (DL per CRP); Walberton, 25.9 (JTR per CRP). E. SUSSEX [**14**] Cooden, 28.6 (JS per CRP); Icklesham, 1.10 (Hunter, 2012). E. KENT [**15**] Dungeness, 2.8 (JP per IDF); Sissinghurst, 28.9 (SJB). E. NORFOLK [**27**] Eccles-on-sea, 17.7, 1.8 (Bowman, 2012).

2053 ***Coscinia cribraria*** **(L.) Speckled Footman [R][I]**
Records of the non-native, immigrant ssp. *arenaria* (Lempke).
E. KENT [**15**] Dungeness, 27.6 (DW).

2054 ***Utetheisa pulchella*** **(L.) Crimson Speckled [I]**
Total no. reported: **47**
By vice-county: **1** (24), **2** (1), **6** (1), **9** (3), **10** (1), **11** (1), **13** (1), **14** (4), **15** (2), **17** (1), **18** (1), **25** (1), **48** (1), **49** (2), **58** (1), **59** (1), **H3** (1).
W. CORNWALL [**1**] Church Cove, 3.10, 4.10 (3), 11.10 (Tunmore, 2012); IOS: Gugh, 15.10 (anon.); IOS: St Agnes, 30.9, 2.10, 3.10 (3), 15.10 (Scott, 2012a); IOS: St Mary's, 3.10 (3), 15.10 (2), 26.10 (Scott, 2012a); Kenidjack, 28.10 (LHO); Maenporth, 2.11 (Davis, 2012); Porthgwarra, 9.9 (anon.), 4.10, 5.10 (2) (D. Parker). E. CORNWALL [**2**] Gribbin Head, 14.10 (anon.). N. SOMERSET [**6**] Taunton, 4.10 (G. Moore). DORSET [**9**] Bottomcombe Quarry, Portland, 9.10 (Cade, 2012); Frampton, 10.10 (per MJD); West Bexington, 10.10 (PHS). ISLE OF WIGHT [**10**] Totland, 4.10 (Knill-Jones, 2012). S. HAMPSHIRE [**11**] Wickham Common, 30.10 (K. Coker per TJN). W. SUSSEX [**13**] West Wittering, 12.11 (C. Janman per CRP). E. SUSSEX [**14**] Beachy Head, 21.8, 14.9, 3.10, 4.10 (per CRP). E. KENT [**15**] Dungeness, 4.10 (DW); Dymchurch, 4.11 (JEO). SURREY [**17**] Holmbury St Mary, 5.10 (per MJD). S. ESSEX [**18**] Woodford Green, 4.10 (K. Murray). E. SUFFOLK [**25**] Dunwich Heath, 13.10, first modern VC record (Moore & Deans, 2012). MERIONETHSHIRE [**48**] Llanystumdwy, 13.10 (Hicks & Bantock, 2012). CAERNARVONSHIRE [**49**] Abersoch, 3.10 (M. Griffin); Bardsey Island, 3.10 (anon.). CHESHIRE [**58**] Nantwich, 3.10 (P. Griffiths per SHH). S. LANCASHIRE [**59**] Formby Point, 25.8 (R. Hill per SMP). W. CORK [**H3**] Tilickafinna, Dursey Island, 25.10 (Scott, 2012b).

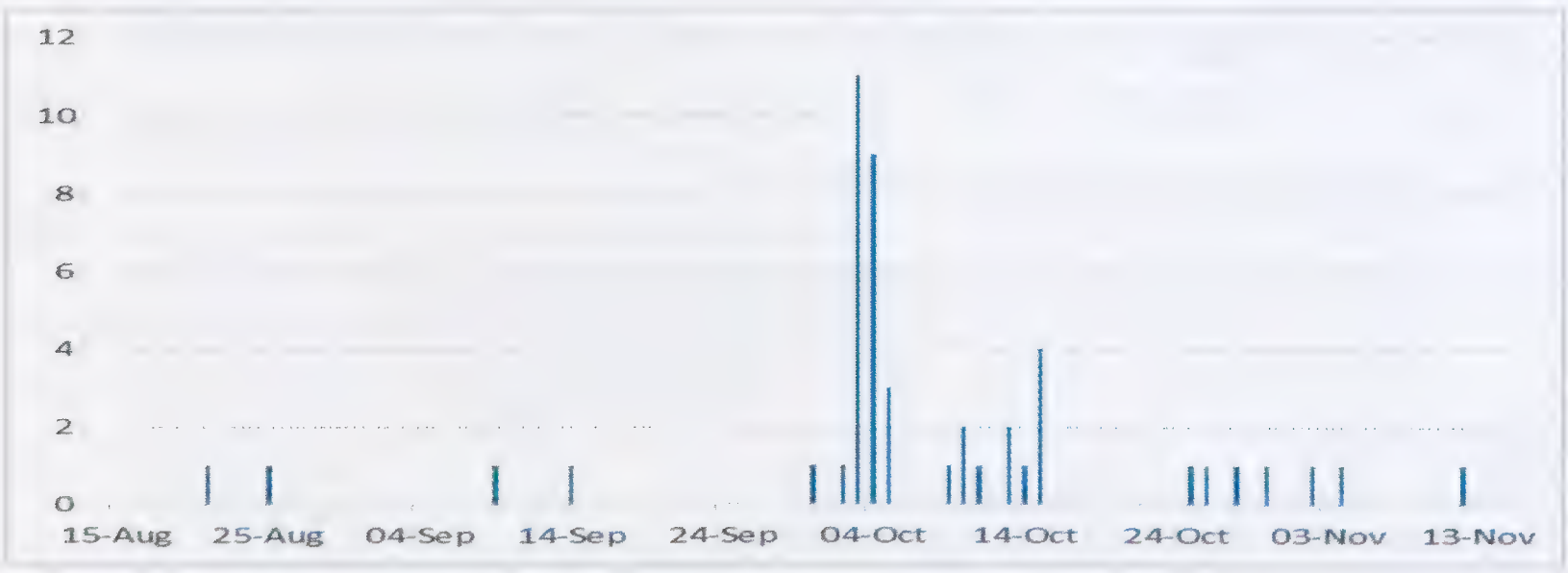

Figure 9. *Utetheisa pulchella* occurrence pattern in 2011.

2058a ***Hyphoraia testudinaria*** **(Geoff.) Patton's Tiger [I]**
DORSET [**9**] Portland, 6.5, first VC record (MC). ISLE OF WIGHT [**10**] Newport, 6.5, on shop window (J. Smith per SAK-J); Totland, 5.5 (SAK-J); first VC records.

NOLIDAE

2079 ***Nola aerugula*** **(Hb.) Scarce Black Arches [I]**
E. KENT [**15**] Dungeness, 27.6 (DW); Lydd-on-sea, 27.6 (DB); Kingsdown, 20.6 (NJ); Pegwell, 29.6 (Solly *et al*., 2012). N. ESSEX [**19**] St Osyth, 27.6, 28.6 (CA).

NOCTUIDAE

2094 ***Agrotis bigramma*** **(Hb.) Great Dart [I][FR]**
ISLE OF WIGHT [**10**] Bonchurch, 25.7 (JH).

2099 ***Actebia praecox*** **(L.) Portland Moth [R][I/V]**
Extralimital records that may relate to immigrant examples.
E. NORFOLK [**27**] Sheringham, 9.9 (M. Preston). S.E. YORKSHIRE [**61**] Spurn, 15.8 (Spence, 2012).

2102a ***Ochropleura leucogaster*** **(Frey.) Radford's Flame Shoulder [I]**
W. CORNWALL [**1**] IOS: St Agnes, 3.11 (Scott, 2012a).

2105 ***Rhyacia simulans*** **(Hb.) Dotted Rustic [R][I]**
Coastal records of a potentially immigrant origin.
E. KENT [**15**] Pegwell, 1.7 (Solly *et al*., 2012). E. SUFFOLK [**25**] Dunwich Heath, 4.7 (Moore & Deans, 2012); Landguard, 27.6 (Odin, 2012).

2107 ***Noctua pronuba*** **(L.) Large Yellow Underwing [R][I]**
Significant coastal influxes likely to indicate large immigrations.
PEMBROKESHIRE [**45**] Ramsey Island, 1.10 (600+) (L. Morgan).

2111a ***Noctua janthina*** **([D. & S.]) Langmaid's Yellow Underwing [I][MC]**
Records from the coastal VC's from **9** to **25** have been excluded as most likely to relate to resident populations.
MONTGOMERYSHIRE [**47**] Commins Coch, 6.8 (2) (PRW); Middletown, 4.8 (per PRW).

2137 ***Eurois occulta*** **(L.) Great Brocade [I][R]**
The following records are all thought to relate to the pale immigrant form.
CHESHIRE [**58**] Alsager, 20.7 (MD per SHH). S.E. YORKSHIRE [**61**] Rudston, 13.8 (ASE per CHF); Spurn, 19.7 (Spence, 2012). S. NORTHUMBERLAND [**67**] Tynemouth, 22.7 (Tams, 2012). N. NORTHUMBERLAND [**68**] Howick, 24.7 (S. Sexton per TJT).

2145 ***Discestra trifolii*** **(Hufn.) Nutmeg [R][I/V]**
Extralimital/coastal records of potential immigrants.
W. CORNWALL [**1**] Cury Cross Lanes, 4.10 (Tunmore, 2012).

2153 ***Heliophobus reticulata*** **(Boisd.) Bordered Gothic [R][I/V]**
Coastal records away from southern Ireland that may relate to immigrants.
E. SUFFOLK [**25**] Landguard, 4.6 (Odin, 2012).

2160a ***Lacanobia splendens*** **(Hb.) Splendid Brocade [I][MC?]**
Total no. reported: **15**
By vice-county: **11** (2), **13** (1), **14** (4), **15** (8).
S. HAMPSHIRE [**11**] Sandy Point, Hayling Island, 21.7, 26.7 (Johnson & Phillips, 2012). W. SUSSEX [**13**] Walberton, 27.6 (JTR per CRP). E. SUSSEX [**14**] Hurst Green, 28.6 (MP per CRP); Icklesham, 25.6, 27.6, 8.7 (Hunter, 2012). E. KENT [**15**] Dungeness, 28.6 (2), 29.6, 30.6, 5.7 (PB, BBa); Kingsgate, 17.5 (Solly *et al*., 2012); Pegwell, 27.6 (Solly *et al*., 2012); Sandwich Bay Bird Observatory, 25.6 (Hodgson & Beugg, 2012).

2183 ***Orthosia miniosa*** **(D. & S.) Blossom Underwing [R][I/V]**
Coastal or extralimital records that may relate to immigrants.
ISLE OF WIGHT [**10**] Bonchurch, 3.4 (JH). W. SUSSEX [**13**] Pagham, 7.4 (2), 14.4 (IL). E. SUSSEX [**14**] Icklesham, 12.4 (Hunter, 2012). E. KENT [**15**] Dymchurch, 2.4, 3.4 (JEO); Greatstone, 11.4, 13.4

(BBa); Ramsgate, 2.4 (Solly *et al.*, 2012); Ruckinge, 2.4 (BBo). N. ESSEX [**19**] St Osyth, 2.4 (CA). E. SUFFOLK [**25**] Dunwich Heath, 18.4 (Moore & Deans, 2012). E. NORFOLK [**27**] Norwich, 19.4 (J. Sutton).

2194 ***Mythimna albipuncta*** **(D. & S.) White-point [R][I/V]**
An established resident within the southern and eastern seaboard counties between VC's **3** & **28**, and inland to include VC's **12**, **16**, **17**, **20**, **22**, **26** & **31**; records are only listed from outside this area, although many of those listed are likely to be associated with an ongoing range expansion.
N. LINCOLNSHIRE [**54**] Gibraltar Point, 20.5, 9.6, 2.9 (Bagworth, 2012). S.E. YORKSHIRE [**61**] Kilnsea, 7.8, 9.8, 21.8 (2), 22.8, 23.8 (2), 24.8 (2), 2.9 (BRS, PAC per CHF); Spurn, 8.8, 20.8, 22.8 (BRS per CHF).

2202 ***Mythimna l-album*** **(L.) L-album Wainscot [R][I/V]**
An established resident within the southern seaboard counties between VC's **1** & **25** and inland to VC's **12** & **17**, and records are only listed from outside this area.
PEMBROKESHIRE [**45**] Ramsey Island, 1.10 (2) (L. Morgan).
WEXFORD [**H12**] Kilpatrick, 1.10, first VC and second Irish record (MO'D).

2203 ***Mythimna unipuncta*** **(Haw.) White-speck [I][MC]**
As in last year's report, records of *unipuncta* away from the Isles of Scilly were scarce enough in 2011 for this species to be moved into Annex 1 in the current report and these are listed in full below. Records of this species from the Isles of Scilly have been summarised due to the presence of a resident population of *M. unipuncta* on the Scillies, and the records of large numbers of locally-bred adults being indistinguishable from records of an immigrant origin.
Total no. reported (away from the Scillies): **33**
By vice-county: **1** (8), **3** (2), **4** (1), **6** (1), **9** (11), **10** (4), **11** (1), **15** (3), **25** (2).
W. CORNWALL [**1**] Buryas Bridge, 28.11 (LHO); IOS summary: Longstone, St Mary's - 2011 annual total: 604; monthly totals: Jan (0), Feb (0), Mar (0), Apr (2), May (2), Jun (2), Jul (2), Aug (12), Sep (10), Oct (207), Nov (308), Dec (59) (Scott, 2012a); Maenporth, 2.10, November (1) (GD); The Lizard, September (1), October (3), 1.12 (Tunmore, 2012; MT). S. DEVON [**3**] Brixham, 25.7 (BBe per BPH); Colyford, 3.9 (PV per BPH). N. DEVON [**4**] Lower Washfield, 3.7 (F. Smith per BPH). N. SOMERSET [**6**] Weston-super-Mare, 28.9 (P. Bowyer). DORSET [**9**] Abbotsbury, 30.9 (MJD *et al.*); Portland Bird Observatory, October (3), November (1) (Cade, 2012); Walditch, 29.9, 30.9 (Parsons, 2012); West Bexington, September (1), October (1), November (1) (Eden, 2012), 1.10 (MJD). ISLE OF WIGHT [**10**] Bonchurch, 19.10, 31.10 (JH); Totland, 21.10, 30.10 (SAK-J per TJN). S. HAMPSHIRE [**11**] Northney, Hayling Island, 4.10 (Johnson & Phillips, 2012). E. KENT [**15**] Faversham, 28.6 (A. Witts per IDF); Iwade, 13.6, 25.6 (IC per IDF). E. SUFFOLK [**25**] Landguard, 7.5 (Odin, 2012); Orfordness, 5.11 (MCM per AWP).

2208 ***Mythimna loreyi*** **(Dup.) Cosmopolitan [I]**
Total no. reported: **46**
By vice-county: **1** (32), **2** (1), **3** (1), **6** (1), **9** (6), **11** (1), **14** (1), **15** (2), **H12** (1).
W. CORNWALL [**1**] Buryas Bridge, 30.10 (LHO); Coverack, 11.10, 13.10 (3), 14.10 (DCGB); IOS: St Agnes, 10.10 (2), 11.10, 14.10, 16.10 (Scott, 2012a), 3.11 (MEH); IOS: Longstone, St Mary's, October (1), November (5), December (1) (Scott, 2012a); Little Treleaver, 20.11 (2) (J. Foster); Sennen, 2.10 (ME); The Lizard, October (15, inc. Coverack records), 21.11 (Tunmore, 2012; MT). E. CORNWALL [**2**] Great Trethew, 1.11 (JCN per LACT). S. DEVON [**3**] Blackstone Point, 1.10 (P. Barden per BPH). N. SOMERSET [**6**] Brean Down, 22.10 (P. Bowyer). DORSET [**9**] Portland, 27.10 (BFS); Portland Bird Observatory, October (3) (Cade, 2012); West Bexington, 1.10 (2) (DF). S. HAMPSHIRE [**11**] Lymington, 13.6 (PD per TJN). E. SUSSEX [**14**] Icklesham, 12.11 (Hunter, 2012). E. KENT [**15**] Dungeness, 4.11 (DW); Sandwich Bay Bird Observatory, 12.8 (Hodgson & Beugg, 2012).
WEXFORD [**H12**] Kilpatrick, 1.10 (MO'D).

2209 ***Mythimna flammea*** **(Curtis) Flame Wainscot [R][I][V]**
Coastal records away from known resident populations.
E. KENT [**15**] St Margaret's Bay, 9.5 (Jarman & Morris, 2012). E. SUFFOLK [**25**] Bawdsey, 5.6 (Deans, 2012).

2238 ***Lithophane furcifera*** **(Hufn.) Conformist [I][FR]**
E. INVERNESS-SHIRE [**96**] Insh Marshes, 9.4, of the immigrant race *furcifera*, new to Scotland (MJD, PEB).

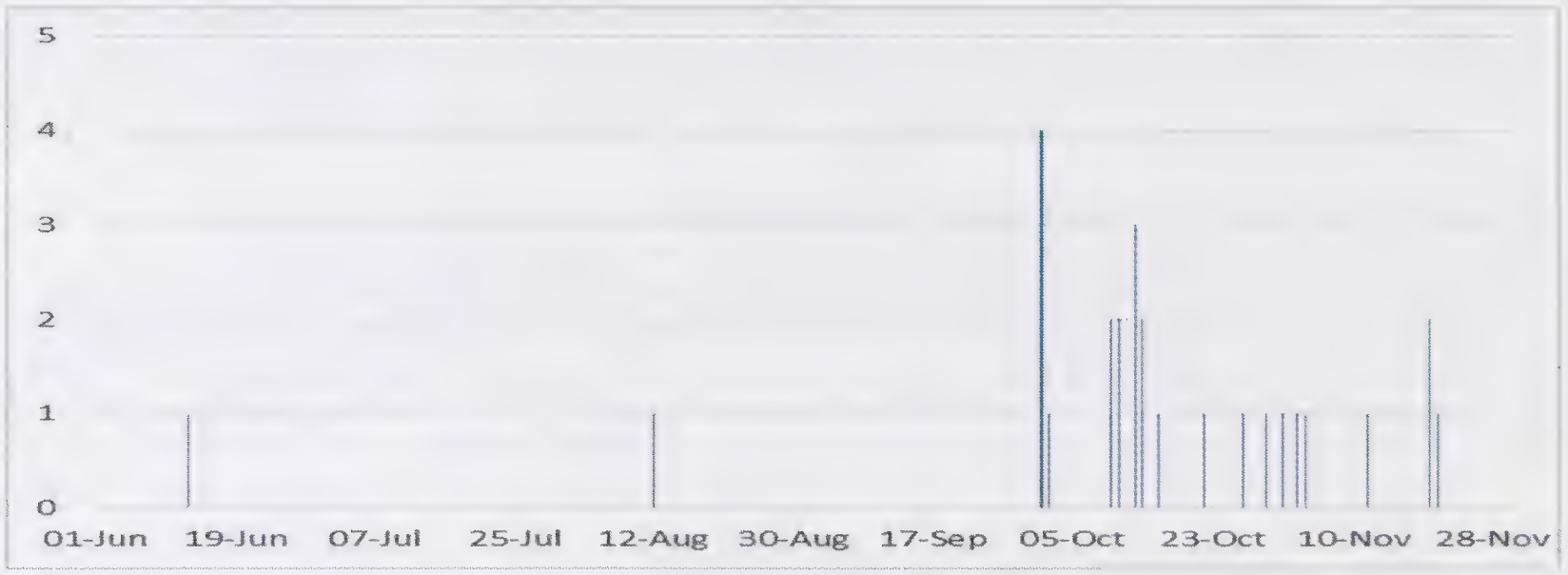

Figure 10. *Mythimna loreyi* occurrence pattern in 2011 (dated records only).

2241 ***Xylena vetusta*** **(Hb.) Red Sword-grass [R][I][V]**
Records of a potentially immigrant origin.
W. CORNWALL [**1**] The Lizard, 14.5, 6.11, 15.11 (Tunmore, 2012).

2246a ***Dryobota labecula*** **(Esp.) Oak Rustic [R][I/V]**
Extralimital, coastal records only.
E. KENT [**15**] Pegwell, 3.11, first VC record (Solly *et al.*, 2012).

2251 ***Trigonophora flammea*** **(Esp.) Flame Brocade [I][FR][MC]**
All reported records are listed although some of these are likely to be associated with localised colonies, particularly within VC's **9** & **13**.
Total no. reported: **136+**
By vice-county: **3** (2), **9** (31), **10** (10), **14** (92+), **15** (1).
S. DEVON [**3**] Colaton Raleigh, 30.10 (J. McKay per RFM); Colyford, 31.10 (P. Vernon). DORSET [**9**] Durlston, 30.9 (AJK), 2.10 (BFS, BE per LJH); East Lulworth, 29.10, 30.10, 31.10 (2) (LJH); Langton Matravers, 29.9 (RC per LJH); Portland, 30.9 (3), 1.10, 2.10, 4.10, 5.10, 7.10, 8.10, 13.10, 15.10 (2), 17.10, 25.10, 27.10, 31.10 (MC *et al.* per LJH); West Bexington, 29.9 (2), 2.10, 3.10, 7.10, 24.10, 25.10, 26.10 (RE *et al.* per LJH). ISLE OF WIGHT [**10**] Bonchurch, 27.10, 31.10, 2.11 (JH); Totland, 17.10, 25.10, 27.10 (4), 28.10 (Knill-Jones, 2012; DCGB). E. SUSSEX [**14**] Beachy Head area, 1.10 – 14.10 (91+) (per CRP); Friston, 29.9 (MB). E. KENT [**15**] Kingsgate, 4.11 (Solly *et al.*, 2012).

2258a ***Conistra rubiginosa*** **(Scop.) Black-spotted Chestnut [I?][MC]**
E. KENT [**15**] Sandwich Bay Bird Observatory, 22.12, first VC record (Hodgson & Beugg, 2012). W. KENT [**16**] Dartford, 6.11, 8.11 (2), and several subsequently, new to Britain (Winterman & Hunter, 2012).

2261 ***Conistra erythrocephala*** **(D. & S.) Red-headed Chestnut [I][MC?]**
Total no. reported: **18**
By vice-county: **1** (1), **9** (3), **10** (4), **13** (1), **14** (1), **15** (2), **19** (2), **25** (3), **27** (1).
W. CORNWALL [**1**] Budock Water, 24.11 (Davis, 2012). DORSET [**9**] Portland, 31.10, 4.11, 22.11 (Cade, 2012). ISLE OF WIGHT [**10**] Bonchurch, 16.11, 19.11 (2) (JH); Cranmore, 22.11 (Knill-Jones,

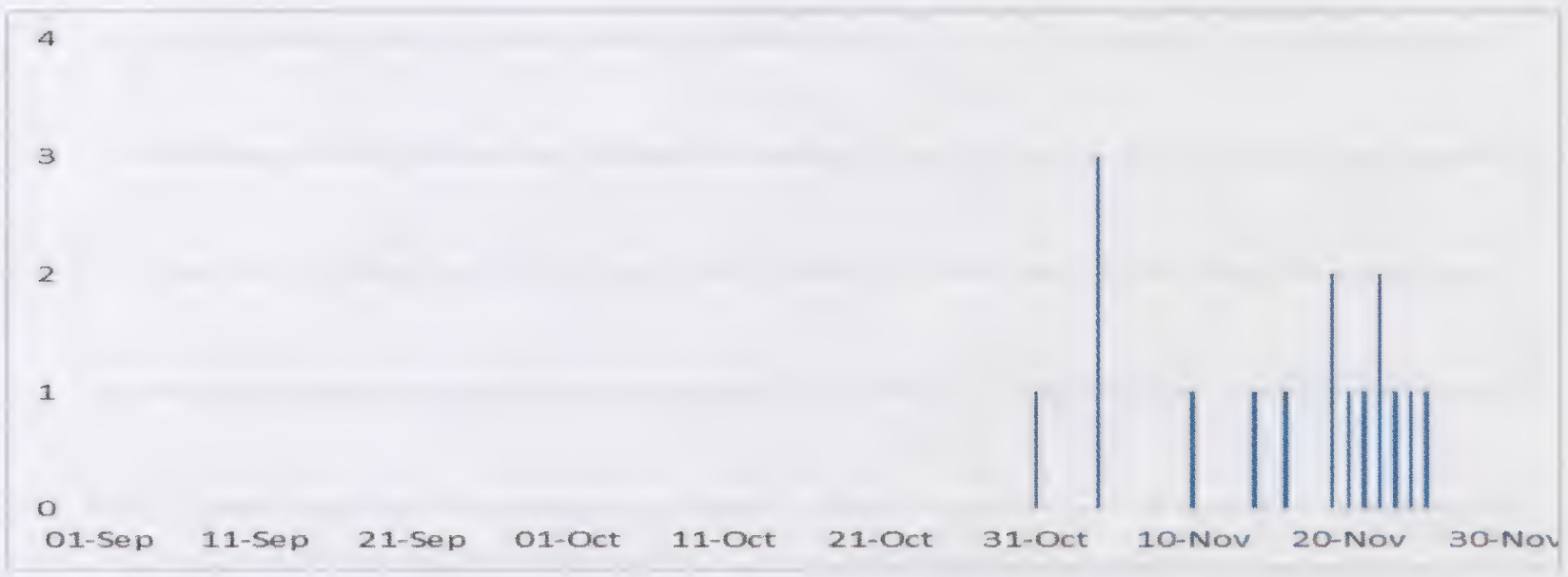

Figure 11. *Conistra erythrocephala* occurrence pattern in 2011 (autumn records only).

2012). W. SUSSEX [**13**] Bracklesham, 4.11 (DL per CRP). E. SUSSEX [**14**] Icklesham, 14.11 (Hunter, 2012). E. KENT [**15**] Dungeness, 4.11 (M. Smith); Ruckinge, 10.11 (BBo). N. ESSEX [**19**] East Mersea, 23.11 (DU); St Osyth, 11.2 (RA). E. SUFFOLK [**25**] Dunwich Heath, 31.3, 20.11 (Moore & Deans, 2012); Landguard, 21.11 (NO per AWP). E. NORFOLK [**27**] Little Melton, 25.11 (PK).

2275 ***Xanthia gilvago*** **(D. & S.) Dusky-lemon Sallow [R][V/I]**
Coastal records away from suitable breeding habitat that may be the result of immigration.
W. CORNWALL [**1**] Cury, 5.10 (FTJ); IOS: St Agnes, 10.10 (Scott, 2012a); IOS: Longstone, St Mary's, 7.10, 11.10 (Scott, 2012a). N. SOMERSET [**6**] Brean Down, 22.10 (P. Bowyer); Weston-super-Mare, 13.10 (P. Bowyer). S. HAMPSHIRE [**11**] Northney, 2.10 (Johnson & Phillips, 2012); West Town, 30.9 (Johnson & Phillips, 2012). E. KENT [**15**] St Margaret's Bay, 27.9, 1.10, 12.10 (Jarman & Morris, 2012). E. SUFFOLK [**25**] Hollesley, 20.10 (Deans, 2012). N. LINCOLNSHIRE [**54**] Gibraltar Point, 3.10 (6) (Bagworth, 2012).

2276 ***Xanthia ocellaris*** **(Borkh.) Pale-lemon Sallow [R][I][V]**
Extralimital/coastal records that are likely to relate to immigrant examples.
W. CORNWALL [**1**] IOS: St Mary's, 29.9, first VC record (Scott, 2012a). S. DEVON [**3**] Heavitree, 11.10, found dead (GJJ per RFM); Uplyme, 28-30.9 (3) (OW per RFM); first VC records. DORSET [**9**] Durlston, 24.9, 29.9 (MJD, JEC *et al.*); West Bexington, 1.10 (2) (MJD *et al.*). ISLE OF WIGHT [**10**] Cranmore, 4.10 (Knill-Jones, 2012); Totland, 1.10 (Knill-Jones, 2012). S. HAMPSHIRE [**11**] Northney, Hayling Island, 8.10 (Johnson & Phillips, 2012); Sandy Point, Hayling Island, 11.10 (Johnson & Phillips, 2012). W. SUSSEX [**13**] Pagham Harbour, 27.9 (IL). E. KENT [**15**] Biddenden, 10.10 (SJB); Lydd-on-sea, 5.10 (DB); Saltwood, 14.10 (P. Howe). E. SUFFOLK [**25**] Dunwich Heath, 23.9 (Moore & Deans, 2012); Landguard, 30.9 (Odin, 2012). E. NORFOLK [**27**] Bradwell, 4.10 (KK); Eccles-on-sea, 3.10 (Bowman, 2012). N. LINCOLNSHIRE [**54**] Addlethorpe, 30.9 (K. Hand); Gibraltar Point, 4.10, 13.10 (Bagworth, 2012).

2292 ***Cryphia algae*** **(Fab.) Tree-lichen Beauty [I][R]**
Extralimital, coastal records that may relate to primary immigration.
W. SUSSEX [**13**] Ferring, 11.8, 17.8 (THF); Pagham Harbour, 29.7 (IL). E. SUSSEX [**14**] Icklesham, 11.8 (Hunter, 2012). E. KENT [**15**] Dymchurch, 4.8 (JEO); New Romney, 1.8 (OL). E. SUFFOLK [**25**] Bawdsey, 5.8 (2), 9.9 (Deans, 2012); Dunwich, 20.8 (CM per AWP); Dunwich Heath, 1.9 (Moore & Deans, 2012); Landguard, 11.8, 13.8, 20.8, 21.8 (Odin, 2012).

2304 ***Trachea atriplicis*** **(L.) Orache Moth [I][FR]**
S. HAMPSHIRE [**11**] West Town, Hayling Island, 30.6 (Johnson & Phillips, 2012). W. SUSSEX [**15**] Bracklesham, 15.6 (DL); Ferring, 27.6 (THF). E. KENT [**15**] Greatstone, 1.7 (BBa); Sandwich Bay Bird Observatory, 26.6 (Hodgson & Beugg, 2012). STAFFORDSHIRE [**39**] Caverswall, 14.7, first VC record (S. Cooper per D. Emley).

2097 ***Actinotia polyodon*** **(Clerck) Purple Cloud [I]**
E. KENT [**15**] Greatstone, 7.5 (BBa).

2097a ***Actinotia hyperici*** **(D. & S.) Pale-shouldered Cloud [I]**
E. KENT [**15**] Saltwood, 11.8 (P. Howe).

2313 ***Enargia paleacea*** **(Esp.) Angle-striped Sallow [R][I]**
Extralimital records of probable immigrants.
E. SUFFOLK [**25**] Rushmere St Andrew, 9.7 (JBH).

2347 ***Chortodes extrema*** **(Hb.) Concolorous [R][I]**
Coastal records away from known resident populations.
E. KENT [**15**] Kingsdown, 27.6 (DCGB); Pegwell, 25.5 (Solly *et al.*, 2012); Sandwich, 27.6 (IH per IDF).

2376 ***Sedina buettneri*** **(Her.) Blair's Wainscot [R][I]**
Records away from known resident populations in VC**9**.
ISLE OF WIGHT [**10**] Freshwater Marsh, 5.10 (JH).

2379a ***Sesamia nonagrioides*** **(Lefeb.) Maize Wainscot [I]**
W. CORNWALL [**1**] IOS: St Agnes, 2.10, new to Britain (Hicks & Clifton, 2012).

2386c ***Spodoptera cilium*** **(Guen.) Dark Mottled Willow [I]**
W. CORNWALL [**1**] Church Cove, 3.10 (MT); IOS: St Agnes, 8.10 (DG), 12.10 (MEH); IOS: St Mary's, 30.9 (Scott, 2012a); Sennen, 28.9 (ME). S. SOMERSET [**5**] Taunton, 4.10, first VC record (JMc). MERIONETHSHIRE [**48**] Tal-y-bont, 8.10, new to Wales (JMH per ANG).

2387a ***Platyperigea kadenii*** **(Frey.) Clancy's Rustic [MC][I]**
Records from the southern and eastern seaboard counties between VC's **1** & **25** have been excluded from the current report report as these are thought to be mainly associated with recently established resident populations.
N. SOMERSET [**6**] Langport, 12.10, first VC record (J. Bebbington). N. WILTSHIRE [**7**] Crudwell, 13.10 (A. Foster).

2392a ***Proxenus hospes*** **(Frey.) Porter's Rustic [I]**
W. CORNWALL [**1**] IOS: Longstone, St Mary's, 8.10 (Scott, 2012a).

2407 ***Eublemma ostrina*** **(Hb.) Purple Marbled [I]**
Total no. reported: **23**
By vice-county: **1** (19), **3** (1), **9** (3).
W. CORNWALL [**1**] IOS: St Agnes, 1.10, 2.10, 11.10, 13.10, 14.10 (Scott, 2012a); IOS: St Mary's, 30.9, 1.10, 3.10, 7.10, 11.10, 14.10 (Scott, 2012a); Maenporth, 4.10, 6.10 (Davis, 2012); The Lizard, 4.10, 10.10, 11.10 (3), 12.10 (Tunmore, 2012). S. DEVON [**3**] Beacon Hill, 8.10 (P. Barden per BPH). DORSET [**9**] Broadcroft Quarry, Portland, 28.6, by day (Cade, 2012); East Lulworth, 12.11 (LJH); Puddletown, 9.10 (HWH per LJH).

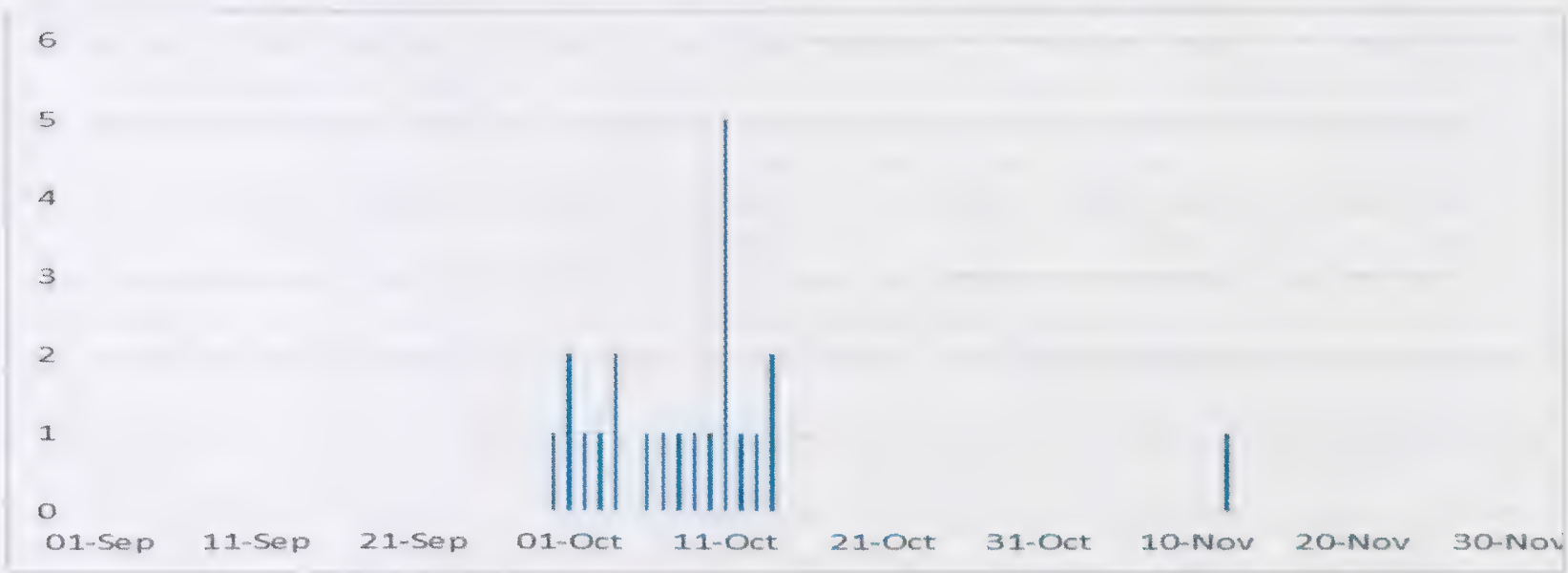

Figure 12. *Eublemma ostrina* occurrence pattern in 2011 (excluding June record).

2407a ***Eublemma purpurina*** **(D. & S.) Beautiful Marbled [I]**
E. KENT [**15**] Dungeness, 29.8 (DW).

2408 ***Eublemma parva*** **(Hb.) Small Marbled [I]**
Total no. adults reported: **316**
By vice-county: **1** (68), **2** (12), **3** (25), **4** (1), **6** (4), **9** (105), **10** (9), **11** (31), **12** (1), **13** (11), **14** (5), **15** (15), **16** (1), **20** (1), **23** (1), **27** (1), **29** (1), **31** (1), **36** (1), **37** (2), **38** (1), **41** (2), **43** (1), **47** (1), **49** (1), **54** (1), **59** (2), **60** (1), **84** (1), **100** (1), **H6** (7), **H12** (1).
W. CORNWALL [**1**] Buryas Bridge, 4.10 (LHO); IOS: St Agnes, 3.10, 8.10 (2), 9.10, 11.10 (3), 12.10, 13.10 (Scott, 2012a); IOS: St Mary's, 30.9 – 15.10 (30) (Scott, 2012a); Falmouth, 2.10 (SO); Maenporth, 8.10 (Davis, 2012); Mullion, 30.9 (RH); The Lizard, 30.9, 1.10, 2.10, 3.10 (8), 4.10 (11), 5.10, 15.10 (2) (Tunmore, 2012). E. CORNWALL [**2**] Duloe, 5.7 (ASP per LACT); Penlee Point, 4.7 (4), by day (J. Cook, JCN per LACT); Seaton, 28.8 (4 larvae) (JHC); Torpoint, 1.7 (2), 3.7, 4.7, 11.7, 12.7, 25.7 (A. Pease, LACT). S. DEVON [**3**] Axmouth, 30.7 (by day); Beesands, 13.8 (larva) (BPH); Brixham, 11.7 (4, by day), 12.7 (10, by day) (RJH); Dawlish, 10.8 (five larvae) (RJH per BPH); East Prawle, 7.8 (eight larvae) (BPH); Great Mattiscombe, 13.8 (seven larvae) (BPH); Heybrook Bay, 8.8 (five larvae) (RJH per BPH); Holcombe, 8.7 (RFM per BPH); Prawle Point, 3.7 (3, by day) (P. Barden per BPH); Slapton, 29.8 (larva) (JHC); Soar Mill Cove, 21.8 (larva) (BPH); Teignmouth, 1.7 (RFM per BPH); Torquay, 14.7 (3, by day) (RJH); Uplyme, 3.7, 7.7 (OW per BPH). N. DEVON [**4**] Croyde, 12.7 (T. Holwill per BPH). N. SOMERSET [**6**] Burnham-on-sea, 4.7 (per P. Bowyer); Weston-super-Mare, 4.7, 12.7, 4.10 (DJLA). DORSET [**9**] Abbotsbury, 12.8 (20+ larvae) (AR per LJH); Burton Bradstock, 1.7 (4) (Parsons, 2012), 3.8 (20+ larvae) (JHC); 17.8 (larvae) (MSP); Canford Heath, 25.9, 12.10 (R. Blake per LJH); Charmouth, 27.6, 2.7, 24.7, 26.7 (G. Sell, MSP per

LJH); Chickerell, 27.6, 21.7, 22.7, 4.10 (C. Pinder per LJH); Cogden Beach, 2.7 (3), 3.8 (larvae), 9.8 (larvae), 13.8 (larvae), 18.8 (larvae) (JEC, RRC, MSP, MJD); Corfe Mullen, 13.7 (per LJH); Dorchester, 11.7 (J. Down per MSP); Durlston, 1.8, 27.9, 29.9 (2), 5.10 (per LJH); East Lulworth, 3.10, 4.10 (LJH); Eypes Mouth, 30.6 (2) (Parsons, 2012), 12.8 (20+ larvae), 21.8 (larvae) (MSP, AR per LJH); Higher Hyde, 25.7 (2), 1.8 (adult + larvae) (DF, AJK); Portland, 4.7, 11.7 (4), 25.7 (3), 26.7 (5), 27.7, 1.8, 22.9, 28.9, 3.10 (3), 4.10 (3), 12.10, 16.10 (MC *et al.* per LJH); Puddletown, 10.10 (HWH per LJH); Shaggs, 12.7, 3.10 (LJH); Spetisbury, 11.7 (DJK per LJH); Studland, 1.8 (DCGB); Tincleton, 11.7 (R. Cottle per LJH); Upwey, 27.6, 21.7, 26.7 (PH per LJH); West Bexington, 5.7, 7.7, 9.7 (3), 12.7 (2), 13.7 (3), 21.7 (4), 24.7, 25.7 (3), 26.7 (3), 27.7, 12.8 (20+ larvae), 3.10 (RE *et al.* per LJH); Weymouth, 27.6, 11.7, 14.7, 21.7, 26.7, 3.10 (JO, PH, PHS); Wyke Regis, 28.6 (3), 2.7, 3.7 (4), 4.7 (2), 5.7, 11.7 (DF per LJH). ISLE OF WIGHT [**10**] Bonchurch, 27.6, 28.6 (four), 12.7, 18.7, August (7 larvae) (JH); Freshwater Marsh, 5.10 (JH); Newtown, 22.7 (TJN). S. HAMPSHIRE [**11**] Brockenhurst, 12.7 (RBW per TJN); Dybdale, 27.6, 12.7, 21.7 (M. Pugh per TJN); Eastleigh, 11.7 (2), 13.7 (2) (SI per TJN); Funtley, 10.7 (MLO per TJN); Great Linford, 28.6 (D. Westerhoff per TJN); Holbury, 11.7 (2) (KJP per TJN); Lymington, 28.6, 11.7 (2) (PD per TJN); Mengham, Hayling Island, 8.7 (Johnson & Phillips, 2012); Northney, Hayling Island, 27.6 (2) (Johnson & Phillips, 2012); Portchester, 4.7, 9.7 (J. Stokes per TJN); Portsmouth, 1.7, 15.7 (IRT per TJN); Sandy Point, Hayling Island, 29.7 (Johnson & Phillips, 2012); Sholing, 29.6 (ARC per TJN); Southsea, 11.7 (JRL per TJN); Titchfield Common, 2.7 (D. Wallace per TJN); Totton, 10.7 (LDH per TJN); West Town, Hayling Island, 3.7, 11.7 (Johnson & Phillips, 2012); Wickham Common, 16.7, 20.7 (K. Coker per TJN). N. HAMPSHIRE [**12**] Farnborough, 11.7 (KBW per TJN). W. SUSSEX [**13**] Bracklesham, 16.10 (DL per CRP); Ferring, 27.6 (3), 28.6, 26.7 (THF); Middleton-on-sea, 7.7 (IDM per CRP); Pagham Harbour, 5.7, 11.7, 25.7 (IL); Walberton, 8.10 (JTR per CRP). E. SUSSEX [**14**] Heathfield, 27.6 (DRML per CRP); Peacehaven, 30.6 (Pratt, 2012); Rye Harbour, 28.6 (2), 4.7 (CB). E. KENT [**15**] Dungeness, 27.6, 28.6 (2), 29.6, 30.6, 1.7, 5.7, 11.7 (DW, PB, BBa); Dymchurch, 29.6, 13.7 (JEO); Greatstone, 14.7 (BBa); Kingsdown, 27.6 (2) (NJ); Pegwell, 28.6 (Solly *et al.*, 2012); Ruckinge, 2.8 (BBo). W. KENT (**16**) Grain, 4.7 (AGJB per IDF). HERTFORDSHIRE [**20**] Braughing Friars, 27.6 (BS per CWP). OXFORDSHIRE [**23**] Oxford, 11.7 (B. Sheldon). E. NORFOLK [**27**] Norwich, 18.7, first VC record (I. Lindsay). CAMBRIDGESHIRE [**29**] Stretham, 9.7 (I. Barton). HUNTINGDONSHIRE [**31**] Yaxley, 4.7, first VC record (A. Frost per BD). HEREFORDSHIRE [**36**] Bodenham, 11.7 (R. Hemming). WORCESTERSHIRE [**37**] Bewdley, 4.7 (I. Machin); Pendock, 5.10 (R. Clements). WARWICKSHIRE [**38**] Coventry, 1.7, first VC record (R. Brooker per DCGB). GLAMORGAN [**41**] Rhoose Point, 1.7 (2) (A. Mantell). RADNORSHIRE [**43**] Glasbury, 4.10, first VC record (PGC). MONTGOMERYSHIRE [**47**] Commins Coch, 3.10, first VC record (PRW). CAERNARVONSHIRE [**49**] Bangor, early October, first VC record (per J. Harold). N. LINCOLNSHIRE [**54**] Gibraltar Point, 15.7, first VC record (Bagworth, 2012). S. LANCASHIRE [**59**] Crosby, 4.7 (C. Fletcher per SMP); Walmer Bridge, 4.7 (G. Jones per SMP). N. LANCASHIRE [**60**] Preston, 31.7 (ZH per SMP). W. LOTHIAN [**84**] Abercorn, 4.7, first VC record (C. Convery). CLYDE ISLES [**100**] Bute, 27.7, first VC record (per MT).

WATERFORD [**H6**] Tramore, 29.9, 30.9, 1.10, 8.10 (4), first VC records (Bryant & Walsh, 2012). WEXFORD [**H12**] Kilmuckridge, 2.8 (P. Strickland).

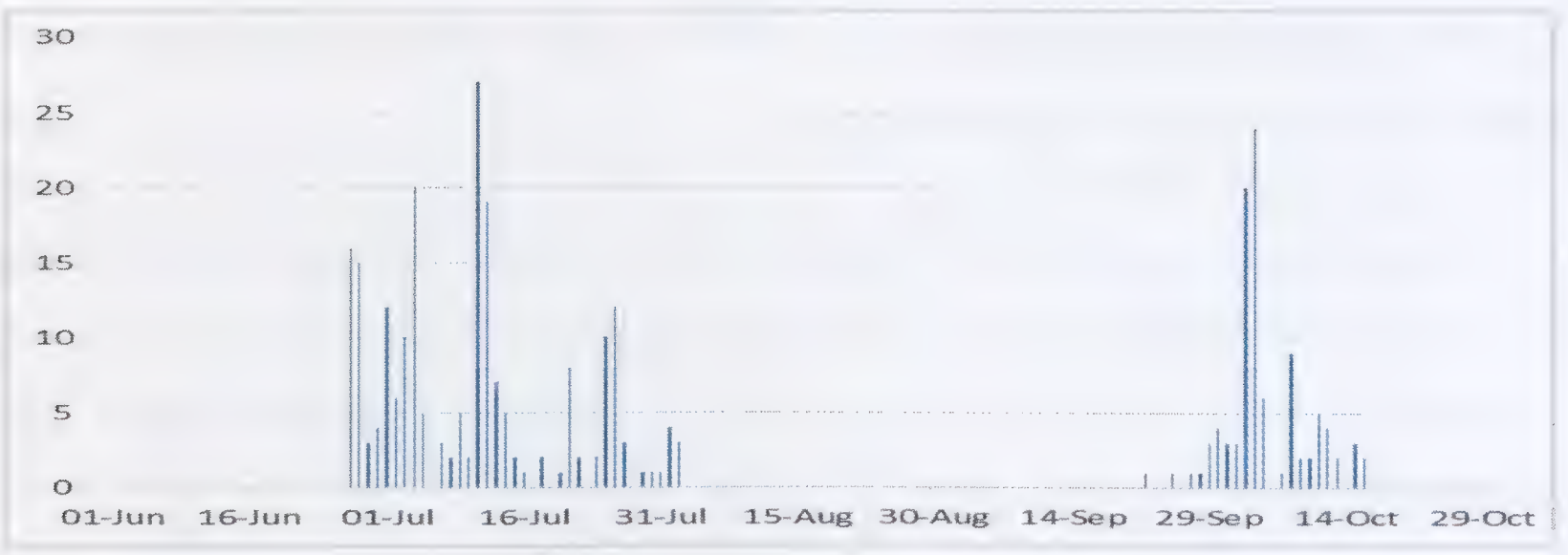

Figure 13. *Eublemma parva* occurrence pattern in 2011 (dated adult records only).

2413 *Deltote bankiana* (Fab.) Silver Barred [R][I/V]

Coastal records away from known populations.

E. KENT [**15**] Dungeness, 4.7 (PB); Kingsgate, 29.6 (Solly *et al.*, 2012); Ramsgate, 9.7 (Solly *et al.*, 2012); Sandwich, 26.6, 27.6 (IH per IDF). E. SUFFOLK [**25**] Eastbridge, 8.5 (J. Gibbs); Landguard, 13.6 (NO per AWP).

2420 ***Earias insulana*** **(Boisd.) Egyptian Bollworm [I][In]**
DORSET [**9**] Portland Bird Observatory, 8.10 (MC).

2428 ***Chrysodeixis chalcites*** **(Esp.) Golden Twin-spot [I][In]**
Total no. reported: **11**
By vice-county: **1** (2), **9** (1), **13** (1), **15** (2), **18** (1), **27** (1), **62** (2), **64** (1).
W. CORNWALL [**1**] IOS: Holy Vale, St Mary's, 15.10 (M. Goodey); IOS: St Agnes, 12.10 (Scott, 2012a. DORSET [**9**] Portland Bird Observatory, 3.10 (Cade, 2012). W. SUSSEX [**13**] Haywards Heath, 29.10 (PL per CRP). E. KENT [**15**] Dymchurch, 28.10 (JEO); Greatstone, 13.11 (BBa). S. ESSEX [**18**] Bradwell-on-sea, 13.11 (Dewick, 2012). E. NORFOLK [**27**] Filby, 19.11 (L. Futter). N.E. YORKSHIRE [**62**] Great Smeaton, 25.7 (JE per CHF); Guisborough, 2.8 (R. Woods per CHF). MID-W. YORKSHIRE [**64**] Bellflask, 18.8 (B. Morland per CHF).

2429 ***Chrysodeixis acuta*** **(Walk.) Tunbridge Wells Gem [I][In]**
WATERFORD [**H6**] Tramore, 30.9, first VC record and naturally occurring Irish record (TB).

2430 ***Ctenoplusia limbirena*** **(Guen.) Scar Bank Gem [I]**
W. CORNWALL [**1**] IOS: Longstone, St Mary's, 23.9 (Scott, 2012a).

2432 ***Trichoplusia ni*** **(Hb.) Ni Moth [I]**
Total no. reported: **87**
By vice-county: **1** (4), **2** (1), **3** (3), **9** (42), **10** (5), **11** (5), **13** (2), **14** (2), **15** (7), **18** (2), **25** (1), **28** (1), **37** (1), **38** (1), **41** (2), **47** (1), **53** (1), **60** (3), **61** (2), **63** (1).
W. CORNWALL [**1**] Church Cove, 5.10 (Tunmore, 2012); Maenporth, 9.7 (Davis, 2012); Mullion Cove, 1.10 (GBS); Sennen, 2.10 (ME). E. CORNWALL [**2**] Torpoint, 4.9 (LACT). S. DEVON [**3**] Abbotskerswell, 15.9 (BPH); Brixham, 8.9 (BBe per BPH); Exmouth, 3.7 (D. Wall per BPH). DORSET [**9**] Broadmayne, 21.9 (PBJ per LJH); Charmouth, 11.7 (G. Sell per LJH); Cogden Beach, 2.7 (JEC per LJH); Marshwood, 3.7 (J. Baker); Portland, 27.6, 3.7, 4.7, 2.9, 3.9, 9.9, 14.9, 15.9, 2.10, 3.10 (2) (MC *et al*. per LJH); Preston, 9.9 (RL); Puddletown, 3.7, 5.7 (HWH per LJH); Tincleton, 27.6 (R. Cottle per LJH); Upwey, 9.9 (PH per LJH); Walditch, 11.7 [not 11.6 as given in Parsons, 2012] (MSP per LJH); West Bexington, 9.6, 3.7, 4.7, 10.7, 1.9, 2.9, 3.9, 6.9, 14.9, 27.9, 1.10 (RE *et al*. per LJH); Weymouth, 10.7, 11.7, 2.9 (2), 9.9, 27.9 (JO, PHS, PH); Wyke Regis, 3.7 (2), 13.7, 1.9 (DF per LJH). ISLE OF WIGHT [**10**] Bonchurch, 29.6, 3.7, 8.9, 9.9 (JH); Freshwater, 2.9 (Knill-Jones, 2012). S. HAMPSHIRE [**11**] Portsmouth, 2.7 (IRT per TJN); Sandy Point, Hayling Island, 2.9 (Johnson & Phillips, 2012); Sholing, 1.7, 10.7 (ARC, T. Slaven per TJN); Southsea, 1.9 (JRL per TJN). W. SUSSEX [**13**] Bracklesham, 8.9 (DL per CRP); Walberton, 9.9 (JTR per CRP). E. SUSSEX [**14**] Beachy Head, 3.10 (MB per CRP); Friston, 1.10 (MB, GL per CRP). E. KENT [**15**] Dungeness, 3.9 (DW); Dymchurch, 26.9 (JEO); Kingsgate, 5.7 (Solly *et al*., 2012); Lydd-on-sea, 15.7 (DB); Pegwell, 16.9 (Solly *et al*., 2012); Sissinghurst, 29.6, 9.9 (SJB). S. ESSEX [**18**] Woodford Green, 5.7, 5.9 (RB). E. SUFFOLK [**25**] Landguard, 22.9 (Odin, 2012). W. NORFOLK [**28**] Brandon area, 30.10 (K. Puttick). WORCESTERSHIRE [**37**] Warndon, 9.9 (anon.). WARWICKSHIRE [**38**] Stratford upon Avon, 5.7 (RGB per DCGB). GLAMORGAN [**41**] Rhoose Point, 29.6, 1.7 (A. Mantell). MONTGOMERYSHIRE [**47**] Cors Dyfi, 28.9, first VC record (MEW per PRW). S. LINCOLNSHIRE [**53**] Broadholme, 8.9 (M. Gray). N. LANCASHIRE [**60**] Lightfoot Green, 28.9 (SMP); Yealand Conyers, 2.10 (BH per SMP); Yealand Redmayne, 1.10 (SS per SMP). S.E. YORKSHIRE [**61**] Kilnsea, 9.7 (JWC per CHF); Spurn, 1.7 (BRS per CHF). S.W. YORKSHIRE [**63**] Kirk Smeaton, 29.9 (P. Simmons per CHF).

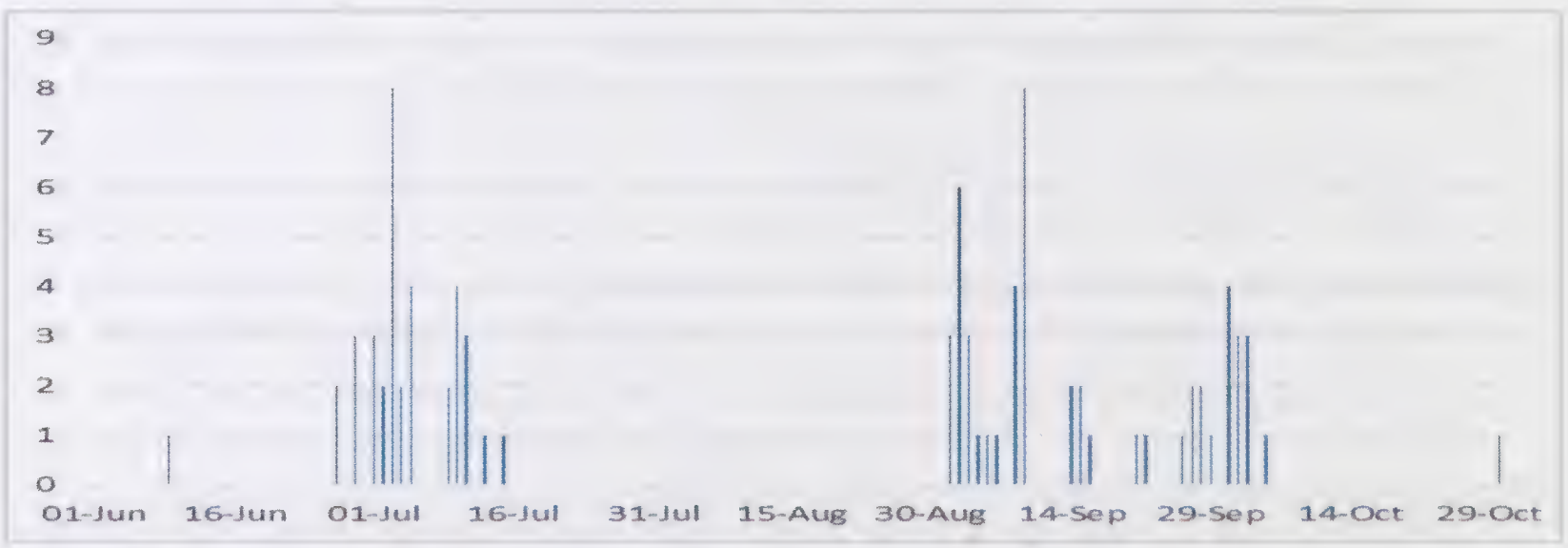

Figure 14. *Trichoplusia ni* occurrence pattern in 2011.

2433 ***Trysanoplusia orichalcea*** **(Frey.) Slender Burnished Brass [I]**
W. CORNWALL [**1**] Nanquidno, 28.9 (CM).

2436 ***Macdunnoughia confusa*** **(Steph.) Dewick's Plusia [I][In][MC?]**
Total no. reported: 44
By vice-county: **1** (1), **3** (2), **6** (2), **9** (11), **10** (2), **11** (2), **13** (4), **14** (3), **15** (1), **17** (10), **18** (3), **19** (1), **20** (1), **27** (1).
W. CORNWALL [**1**] Church Cove, 12.10 (Tunmore, 2012). S. DEVON [**3**] Colyford, 14.10, 15.10 (PV per BPH). N. SOMERSET [**6**] Wells, 7.10 (P. Smith); Weston-super-Mare, 1.10 (DJLA). DORSET [**9**] Portland Bird Observatory, 28.10 (Cade, 2012); Puddletown, 13.10 (HWH per LJH); Upwey, 28.9, 22.10 (PH per LJH); West Bexington, 29.9, 1.10 (2) (RE, DF, MJD per LJH); Weymouth, 28.9, 22.10 (PH); Wimborne St Giles, 28.10, 29.10 (JCW per LJH). ISLE OF WIGHT [**10**] Totland, 2.10, 28.10 (Knill-Jones, 2012). S. HAMPSHIRE [**11**] West Town, Hayling Island, 2.6, 30.9 (Johnson & Phillips, 2012). W. SUSSEX [**13**] Birdham, 13.10 (P. Stent per CRP); Burgess Hill, 13.10 (K. Ruff per CRP); Pagham Harbour, 13.8 (BFS per CRP); Walberton, 8.8 (JTR per CRP). E. SUSSEX [**14**] Bexhill, 9.9 (SP per CRP); Playden, 16.10 (P. Bonham per CRP); Rye Harbour, 2.10 (CB per CRP). E. KENT [**15**] Greatstone, 28.9 (Clancy, 2012a). SURREY [**17**] Beddington, 28.9, by day (F. Prater); Hackbridge, 28.8 – 1.10 (8) (P. Alfrey); Nutfield, 3.10 (R. Bartlett); VC**17** records likely to originate from a local colony. S. ESSEX [**18**] Bradwell-on-sea, 7.7, 1.10, 2.10 (Dewick, 2012). N. ESSEX [**19**] St Osyth, 26.9 (CA). HERTFORDSHIRE [**20**] Ware, 27.4 (EG). E. NORFOLK [**27**] Filby, 30.9 (D. Hipperson).

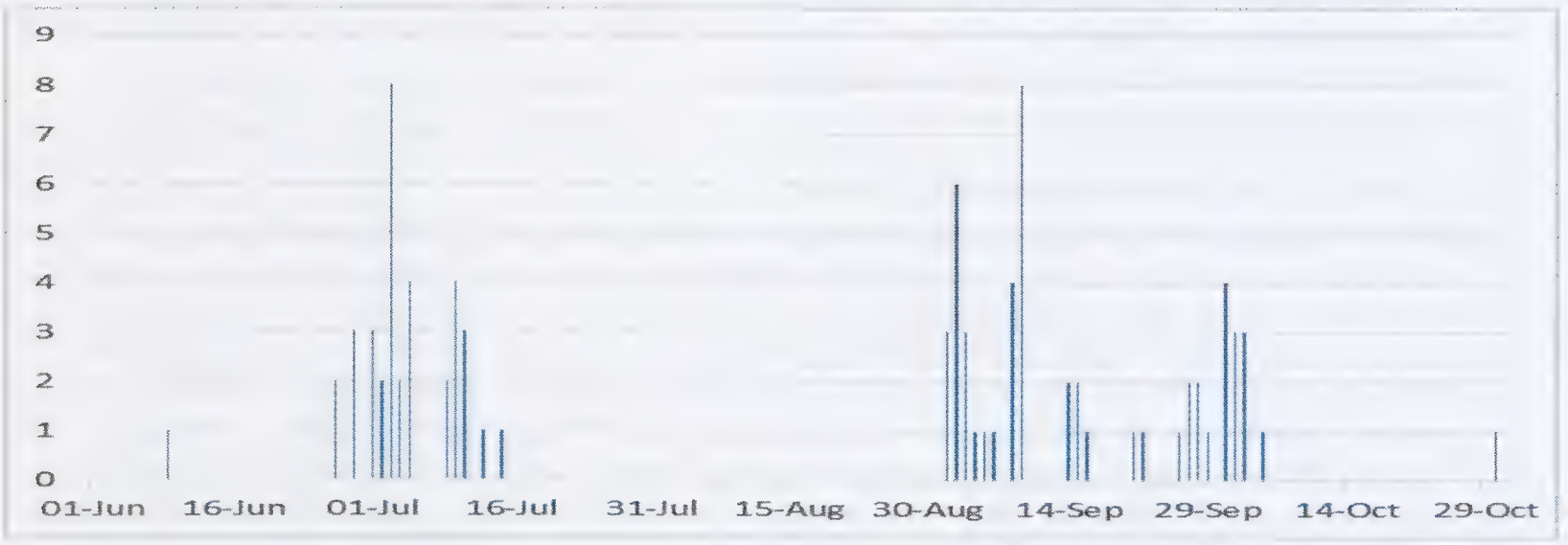

Figure 15. *Macdunnoughia confusa* occurrence pattern in 2011 (dated records only).

2451 ***Catocala fraxini*** **(L.) Clifden Nonpareil [I][FR][MC]**
Now breeding widely in several counties across southern England; only coastal/extralimtal records are listed below that are most likely to relate to primary immigration.
S. DEVON [**3**] Bradninch, 1.10 (F. Jordan per BPH); Uplyme, 30.9 (OW per BPH). DORSET [**9**] Brownsea Island, 29.9 (C. Thain per LJH); Cold Harbour, 20.9 (PHS per LJH); Dorchester, 29.9 (J. Down per MSP); Durlston, 4.10 (BFS per LJH); East Lulworth, 6.10 (LJH); Mapperton, 30.9 (PHS per LJH); Puddletown, 7.9, 15.9, 22.9 (2), 23.9, 24.9 (2), 27.9, 30.9, 3.10 (2) (HWH per LJH); Shaggs, 5.10 (Z. Randle per LJH); Spetisbury, 26.9 (DJK per LJH); Studland, 2.10 (DCGB); Tolpuddle, 29.9 (J. Francis per LJH); Upwey, 29.9 (PH per LJH); Weymouth, 29.9 (PH). ISLE OF WIGHT [**10**] Bonchurch, 19.9, 22.9, 26.9 (Knill-Jones, 2012); Cranmore, 7.9, 19.9 (2) (Knill-Jones, 2012); Firestone Copse, 30.10 (C.R. Pope per TJN); Totland, 29.9 (Knill-Jones, 2012). S. HAMPSHIRE [**11**] Ashurst, 28.10 (KG per TJN); Burton, 27.9 (J. Southwood per TJN); Holbury, 9.9 (JEC per TJN); Lymington, 17.10 (ASH per TJN); Southsea, 10.9 (JRL per TJN). E. KENT [**15**] Dymchurch, 29.9 (JEO).

2453 ***Catocala electa*** **(View.) Rosy Underwing [I]**
DORSET [**9**] West Bexington, 22.8 (PHS).

2454 ***Catocala promissa*** **(D. & S.) Light Crimson Underwing [R][I/V]**
Records away from breeding populations in and around the New Forest that may relate to immigrant examples.
W. SUSSEX [**13**] Ferring, 27.6 (THF); Walberton, 1.7 (JTR per CRP).

2455 ***Catocala sponsa*** **(L.) Dark Crimson Underwing [R][I]**
Records away from breeding populations in and around the New Forest that are likely to relate to immigrant examples.

ISLE OF WIGHT [**10**] Bonchurch, 22.8 (JH). E. KENT [**15**] Dymchurch, 27.8, 2.9 (JEO); Greatstone, 2.8 (BBa); Kingsdown, 5.8 (JP per IDF). N. ESSEX [**19**] Frinton-on-sea, 1.8 (B. Lock). E. SUFFOLK [**25**] Landguard, 2.8 (Odin, 2012).

2456 ***Minucia lunaris*** **(D. & S.) Lunar Double-stripe [I][FR]**
E. SUSSEX [**14**] Bracklesham, 9.5 (DL per CRP). BERKSHIRE [**22**] Wokingham, 10.5, first VC record (RH).

2460 ***Dysgonia algira*** **(L.) Passenger [I]**
S. ESSEX [**18**] Woodford Green, 9.9 (RB).

2296 ***Tathorhynchus exsiccata*** **(Led.) Levant Blackneck [I]**
W. CORNWALL [**1**] IOS: Longstone, St Mary's, 29.4 (Scott, 2012a). E. KENT [**15**] Sholden, 7.5 (LH).

2475 ***Parascotia fuliginaria*** **(L.) Waved Black [R][I/V]**
Coastal/extralimital records of possible immigrant examples.
E. SUSSEX [**14**] Icklesham, 3.8 (Hunter, 2012). E. SUFFOLK [**25**] Grundisburgh, undated (M. Hough per AWP).

2476 ***Hypena crassalis*** **(Fab.) Beautiful Snout [R][V/I]**
Coastal/extralimital records of possible immigrant examples.
S. ESSEX [**18**] Bradwell-on-sea, 17.6 (Dewick, 2012). W. NORFOLK [**28**] Hunstanton, 20.5 (K. & J. Fox).

2478 ***Hypena obsitalis*** **(Hb.) Bloxworth Snout [R][V/I]**
Records away from known breeding populations in VC's **1**, **2**, **3**, **9** & **10**.
W. CORNWALL [**1**] IOS: Longstone, St Marys, 12.7 (M. Scott). W. SUSSEX [**13**] Bracklesham, 22.10 (DL per CRP); Brighton, 19.4 (M. Bailey per CRP); Haywards Heath, 27.10 (D. Dey per CRP); Worthing, 4.11 (CG per CRP). E. KENT [**15**] Dymchurch, 9.11 (JEO); Hythe, 13.7, 24.9 (IAR); Kingsdown, 2.9 (NJ); Ramsgate, 8.9 (Solly *et al.*, 2012); Saltwood, 23.8 (P. Howe).

2488a ***Pechipogo plumigeralis*** **(Hb.) Plumed fan-foot [I][MC]**
Records away from VC's **14** & **15** where resident populations are becoming increasingly widely established.
S. HAMPSHIRE [**11**] Mengham, Hayling Island, 27.6 (Johnson & Phillips, 2012); Sandy Point, Hayling Island, 3.7 (Johnson & Phillips, 2012). S. ESSEX [**18**] Bradwell-on-sea, 25.9 (Dewick, 2012).

2495 ***Trisateles emortualis*** **(D. & S.) Olive Crescent [R][I]**
Coastal/extralimital records away from suitable breeding habitat.
ISLE OF WIGHT [**10**] Westover Down, 26.5 (Knill-Jones, 2012). W. SUSSEX [**13**] Bracklesham, 27.6 (DL per CRP). E. KENT [**15**] Dymchurch, 15.7 (JEO).

ANNEX 2:
SELECTED RECORDS OF COMMONER MIGRANT SPECIES IN 2011

Numerical summaries are not provided for the migrant butterfly species listed in Annex 2, or for the commoner immigrant species *Plutella xylostella*, *Udea ferrugalis*, *Nomophila noctuella*, *Agrotis ipsilon* or *Autographa gamma*. This is due to the lack of comprehensive records, or the generalised, non-specific nature (or absence) of reports, of these species from many sites. Significant records, site totals and general comments have been given for these species, and county summaries of the diurnal records of the migrant butterflies and *Macroglossum stellatarum* are provided where these have been made available in spreadsheet format.

It has also not been possible to allocate months of occurrence to all the records of Annex 2 species reported. It is therefore the case that the total given for the number

of reported records is based on the figures given in the distributional table, this generally being greater than the sum of the monthly totals given within the lower table. Only records of adults are included in the tables & numerical totals and, whilst it is likely that these will not always be comprehensive, the geographical and chronological occurrence patterns presented should closely reflect the overall picture for each species where these are given.

Key to the symbols used within the distribution tables:

SW – South-west England (VC's 1-4).
CS – Central southern England (coastal) (VC's 5, 6, 9-11, 13).
SE – South-east England (coastal) (VC's 14-16, 18, 19).
EA – East Anglia & Lincolnshire (VC's 25-28, 53, 54).
SI – Southern England (inland) (VC's 7, 8, 12, 17, 20-24, 29-34).
W – Wales (VC's 35, 41-52).
CE – Central England (inland) (VC's 36-40, 53-58).
NE – North-east England (VC's 61, 62, 66-68).
NW – North-west England & the Isle of Man (VC's 59, 60, 63-65, 69-71).
S – Scotland (VC's 72-112).
I – Ireland (VC's H1-H40).

YPONOMEUTIDAE

0464 ***Plutella xylostella* (L.) [R][I]**

Selected annual totals from fixed traps (200+): DORSET [**9**] Portland Bird Observatory – 313 (Cade, 2012). E. KENT [**15**] Isle of Thanet – 734 at five sites (Solly *et al.*, 2012).

Earliest dates: ISLE OF WIGHT [**10**] Freshwater, 19.1 (D. Cooke per TJN).

Latest dates: ISLE OF WIGHT [**10**] Bonchurch, 22.12 (JH). CHESHIRE [**58**] Handbridge, 21.12 (K. Peace per SHH). S. LANCASHIRE [**59**] No site, 25.12 (per SMP). OUTER HEBRIDES [**110**] Benbecula, 18.12 (per JBK).

Large diurnal counts: E. CORNWALL [**2**] Kernock, 24.10 (50), 28.10 (50) inside glasshouse/poly-tunnel (P. Barden per LACT).

Immature stages: E. CORNWALL [**2**] Kernock, 3.10 – 14.11 ('breeding on *Erysimum* spp.' inside glasshouse/poly-tunnel), 21.11 (larvae on *Aubretia* spp. inside glasshouse/poly-tunnel) (P. Barden per LACT).

PYRALIDAE

1395 ***Udea ferrugalis* (Hb.) [I][MC]**

Records of this species from the Isles of Scilly are summarised in a separate section below but have otherwise been excluded from this species account. This is due to the presence of a resident population of *U. ferrugalis* on the Scillies, and the records of large numbers of locally-bred adults being indistinguishable from records of an immigrant origin.

Selected annual totals from fixed traps (300+): W. CORNWALL [**1**] Maenporth – 449 (Davis, 2012); The Lizard – 700 at three sites (Tunmore, 2012). DORSET [**9**] Portland Bird Observatory – 826 (Cade, 2012); West Bexington – 735 (Eden, 2012). ISLE OF WIGHT [**10**] Island total – 356 at five sites (Knill-Jones, 2012). E. KENT [**15**] Dungeness area – 371+ at six sites (Clancy, 2012a). WATERFORD [**H6**] Tramore Bay – 335 (Bryant & Walsh, 2012).

Earliest dates: ISLE OF WIGHT [**10**] Freshwater, 1.1 (D. Cooke per TJN).

Latest dates: ISLE OF WIGHT [**10**] Cranmore, 26.12 (IF per TJN). S. HAMPSHIRE [**11**] Ashurst, 31.12 (KG per TJN); Funtlet, 21.12 (MLO per TJN).

Large single night counts: W. CORNWALL [**1**] Lizard, 8.9 (50) (MT). S. DEVON [**3**] Brixham, 8.9 (120+) (BBe, DCGB). DORSET [**9**] West Bexington, 1.10 (123) (MJD *et al.*). E. KENT [**15**] Dymchurch, 9.11 (50+), 13.11 (50+) (JEO).

Large diurnal count: WATERFORD [**H6**] Great Newtown Head, 30.6 (82) (TB).

Most northerly records: E. INVERNESS-SHIRE [**96**] Inverness, 23.10 (E. Munro per M. Taylor). OUTER HEBRIDES [**110**] South Uist, November (1) (Johnson, 2012).
Selected inland records: STIRLINGSHIRE [**86**] Milngavie, 3.11 (JK).
Scilly Isles [1] summary: Longstone, St Mary's - 2011 annual total: 3352; monthly totals: Jan (0), Feb (0), Mar (1), Apr (23), May (78), Jun (45), Jul (265), Aug (473), Sep (297), Oct (1772), Nov (385), Dec (13) (Scott, 2012a).

1398 ***Nomophila noctuella*** **(D. & S.) [I]**
Selected annual totals from fixed traps (50+): W. CORNWALL [**1**] IOS: Longstone, St Mary's – 709 (Scott, 2012a). DORSET [**9**] Portland Bird Observatory – 98 (Cade, 2012). West Bexington – 54 (Eden, 2012).
Earliest dates: S. DEVON [**3**] Colyford, 12.2 (PV per BPH).
Latest dates: W. CORNWALL [**1**] Buryas Bridge, 28.11 (LHO).
Large single night counts: W. CORNWALL [**1**] IOS: Longstone, St Mary's, 4.10 (33) (M. Scott).
Most northerly records: E. INVERNESS-SHIRE [**96**] Inverness, 25.10 (E. Munro per M. Taylor). OUTER HEBRIDES [**110**] South Uist, April (1) (Johnson, 2012).
Selected inland records: HERTFORDSHIRE [**20**] Bishops Stortford, 2.8 (2) (T. Moverley per CWP). HUNTINGDONSHIRE [**31**] Old Weston, 13.8, 9.9 (K. Royles per BD). MID-W. YORKSHIRE [**64**] Bellflask, 12.7 (B. Morland per CHF); Tadcaster, 11.10, 12.10 (D. Baker per CHF). N.W. YORKSHIRE [**65**] Nosterfield, 1.7 (CHF, JW).

1408 ***Palpita vitrealis*** **(Rossi) [I]**
Total no. reported: **234**
Distribution of records:

SW	CS	SE	EA	SI	W	CE	NE	NW	S	I
133	62	16	4	6	2	1	1	3	0	6

Months of occurrence:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	0	0	1	5	1	31	137	46	0

Selected annual totals from fixed traps (10+): W. CORNWALL [**1**] The Lizard – 27 at six sites (Tunmore, 2012); IOS: St Mary's – 42 at eleven sites (Scott, 2012a). ISLE OF WIGHT [**10**] Island total – 23 at five sites (Knill-Jones, 2012).
Earliest dates: W. CORNWALL [**1**] IOS: St Agnes, 2.7 (Scott, 2012a). N. DEVON [**4**] Northam, Bideford, 1.7 (DEP per BPH). ISLE OF WIGHT [**10**] Bonchurch, 2.7 (JH per TJN). E. KENT [**15**] Dymchurch, 25.6 (JEO).
Latest dates: DORSET [**9**] Walditch, 23.11 (Parsons, 2012). ISLE OF WIGHT [**10**] Bonchurch, 22.11 (JH). E. SUSSEX [**14**] Mountfield, 22.11 (R. Harris per CRP).
Large single night counts: W. CORNWALL [**1**] IOS: St Mary's, 2.10 (11) (Scott, 2012a).
Most northerly records: S. LANCASHIRE [**59**] Southport, 30.9 (R. Moyes per SMP). N. LANCASHIRE [**60**] Leighton Moss, 2.10 (J. Beattie per SMP); Morecambe, 7.10 (J. Girdley per SMP). S. NORTHUMBERLAND [**67**] Tynemouth, 27.9 (Tams, 2012).
Selected inland records: WORCESTERSHIRE [**37**] Stoke Prior, 28.10, first VC record (J. Rush, in Langmaid & Young, 2012).

PIERIDAE

1545 ***Colias croceus*** **(Geoff.) Clouded Yellow [I][MC]**
Selected annual totals (10+): S. HAMPSHIRE [**11**] Gosport – 13 (Tinling, 2012).
VC/County summaries: ISLE OF WIGHT [**10**] 3.7 – 15.10, 31 adults (per TJN). S. HAMPSHIRE [**11**] 21.4 – 12.11, 79 adults (per TJN).
Non-specific comments: W. CORNWALL [**1**] IOS: St Mary's, '..only a few seen before 29.9, after which low numbers were present until early November (Scott, 2012a); The Lizard, '....only in small numbers during the late summer and autumn...' (Tunmore, 2012). DORSET [**9**] Portland, 'a poor year.....with low numbers' (Cade, 2012). E. SUFFOLK [**25**] Minsmere, 'only one sighting' (Harvey & Higgott, 2012).
Earliest dates: W. CORNWALL [**1**] No site, 27.3 (per MT). DORSET [**9**] Portland, 17.4 (Cade, 2012). S. HAMPSHIRE [**11**] Southbourne, 21.4 (KJP per TJN).
Latest dates: W. CORNWALL [**1**] Kennack Sands, 5.11 (Tunmore, 2012). DORSET [**9**] Portland, 12.11 (Cade, 2012). S. HAMPSHIRE [**11**] Southbourne, 12.11 (MG per TJN).

Large counts: W. CORNWALL [**1**] Mullion, 29.9 (20+) (GBS). S. HAMPSHIRE [**11**] Southbourne, 2.10 (11), 16.10 (10) (MG per TJN).
Most northerly records: N. LANCASHIRE [**60**] Silverdale, 29.9 (M. Foley). S.E. YORKSHIRE [**61**] Spurn, September (2), October (1) (Spence, 2012).
Selected inland records: N. WILTSHIRE [**7**] Highworth, 7.8 (SN).

NYMPHALIDAE

1590 ***Vanessa atalanta*** **(L.) Red Admiral [R][I]**
Selected annual totals (150+): DORSET [**9**] West Bexington – 162 (Eden, 2012). S. HAMPSHIRE [**11**] Gosport – 1012 (Tinling, 2012). E. SUSSEX [**14**] Peacehaven – 202 (Pratt, 2012). E. KENT [**15**] Dungeness area – 642+ at two sites (Clancy, 2012a). S.E. YORKSHIRE [**61**] Spurn – 2233 (Spence, 2012). WATERFORD [**H6**] Tramore Bay – 173 (Bryant & Walsh, 2012).
VC/County summaries: ISLE OF WIGHT [**10**] 25.1 – 27.11, 1091+ adults (per TJN). S. HAMPSHIRE [**11**] 9.1 – 26.12, 4160+ adults (per TJN). N. HAMPSHIRE [**12**] 5.2 – 22.12, 2410+ adults (per TJN). HUNTINGDONSHIRE [**31**] 24.2 – 30.11, 1040+ adults (per BD).
Earliest dates (active): S. HAMPSHIRE [**11**] Emsworth, 9.1 (per TJN); Fareham, 9.1 (R. Bryan per TJN).
Latest dates (active): S. HAMPSHIRE [**11**] Portsmouth, 26.12 (C. Barter per TJN). S. ESSEX [**18**] Bradwell-on-sea, 28.12 (Dewick, 2012).
Large counts: DORSET [**9**] Portland, 28.9 – 30.9 (conspicuous southward emigration) (Cade, 2012). ISLE OF WIGHT [**10**] Mottistone Down, 22.10 (47) (D. Cooke per TJN). S. HAMPSHIRE [**11**] Gosport, 16.9 (90) (DJAT); Pennington, 29.10 (50) (M. Swann per TJN); Queen Elizabeth CP, 3.9 (72) (E. Raynor per TJN). N. ESSEX [**19**] Colne Point, 18.9 (150+), flying south (JBH). S.E. YORKSHIRE [**61**] Spurn, 19.10 (152), 20.10 (110), flying south (Spence, 2012).
Selected immature stages: S. ESSEX [**18**] Bradwell-on-sea, 31.12, four larvae (Dewick, 2012). ORKNEY ISLANDS [**111**] Skaill, Mainland, 24.7, larva (JHC).

1591 ***Vanessa cardui*** **(L.) Painted Lady [I]**
Selected annual totals (10+): S. HAMPSHIRE [**11**] Gosport – 16 (Tinling, 2012). E. KENT [**15**] Dungeness area – 22 at two sites (Clancy, 2012a). S.E. YORKSHIRE [**61**] Spurn – 70 (Spence, 2012). W. CORK [**H3**] Dursey Island – 104 (Scott, 2012b). WATERFORD [**H6**] Tramore Bay – 13 (Bryant & Walsh, 2012).
VC/County summaries: ISLE OF WIGHT [**10**] 2.4 – 30.9, 53 adults (per TJN). S. HAMPSHIRE [**11**] 14.2 – 15.11, 22.12, 263+ adults (per TJN). N. HAMPSHIRE [**12**] 7.4 – 17.11, 83+ adults (per TJN). HUNTINGDONSHIRE [**31**] 29.4 – 24.9, 16+ adults (per BD).
Non-specific comments: W. CORNWALL [**1**] IOS: St Mary's, 'in very low numbers all year' (Scott, 2012a). DORSET [**9**] Portland, 'a poor year.....with low numbers' (Cade, 2012). S. HAMPSHIRE [**11**] Hayling Island, '...single figures in September and October' (Johnson & Phillips, 2012). E. SUSSEX [**14**] Peacehaven, 'Along with 2008, 2011 was the most disadvantageous year since 1997' (two recorded all season) (Pratt, 2012). E. KENT [**15**] Isle of Thanet, 'generally in small numbers' (Solly *et al.*, 2012). S. ESSEX [**18**] Bradwell-on-sea, 'seen in very small numbers between 19.5 and 17.10' (Dewick, 2012). E. SUFFOLK [**25**] Landguard, '...in low numbers with just seven noted...' (Odin, 2012); Minsmere, 'a handful of reports' (Harvey & Higgott, 2012).
Earliest dates (active): S. HAMPSHIRE [**11**] Gosport, 14.2 (per TJN); Posbrook, 14.2 (per TJN). W. CORK [**H3**] Dursey Island, 11.2 (Scott, 2012b).
Latest dates (active): S. HAMPSHIRE [**11**] Queen Elizabeth CP, 22.12 (E. Raynor per TJN).
Large counts: W. CORK [**H3**] Dursey Island, 23.4 (33), 24.4 (42) (Scott, 2012b).

GEOMETRIDAE

1716 ***Rhodometra sacraria*** **(L.) Vestal [I]**
Total no. reported: 1989
Distribution of records:

SW	CS	SE	EA	SI	W	CE	NE	NW	S	I
1341	347	70	16	15	58	21	4	22	1	94

Months of occurrence:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	0	2	10	16	67	210	1634	49	0

Selected annual totals from fixed traps (50+): W. CORNWALL [**1**] IOS: Longstone, St Mary's – 183 (Scott, 2012a); Maenporth – 92 (Davis, 2012); The Lizard – 361 at six sites (Tunmore, 2012).
Earliest dates: E. KENT [**15**] Greatstone, 22.5 (BBa). W. NORFOLK [**28**] Docking, 20.5 (A. Clements).
Latest dates: ISLE OF WIGHT [**10**] Bonchurch, 23.11 (JH).
Large single night counts: W. CORNWALL [**1**] Crowlas, 3.10 (26) (MT); IOS: St Agnes, 30.9 (27) (MEH), 30.9 (30) (D. Price); IOS: Longstone, St Mary's, 3.10 (54), 4.10 (42) (M. Scott). Maenporth, 3.10 (37) (GD); Mullion, 30.9 (21) (RH); The Lizard, 2.10 (25), 3.10 (35) (MT).
Most northerly records: N. NORTHUMBERLAND [**68**] Farne Islands, 3.10 (D. Steele per TJT). OUTER HEBRIDES [**110**] South Glendale, South Uist, 24.10 (Johnson, 2012).
Selected inland records: OXFORDSHIRE [**23**] Oxford, 3.10 (DR). HEREFORDSHIRE [**36**] Bodenham, 28.9 (R. Hemming). WORCESTERSHIRE [**37**] Norchard, 8.10 (M. Southall). WARWICKSHIRE [**38**] Charlecote, 3.10 (DCGB); Hillmorton, 5.10 (2) (PFN per DCGB); Temple Balsall, 7.10 (G. Wheeler per DCGB); Warwick, 4.10, 5.10 (SDT per DCGB). STAFFORDSHIRE [**39**] Great Bridgeford, 1.9 (C. Williams per DWE). S. NORTHUMBERLAND [**67**] Kielder, 2.10, 3.10 (D. Kipling per TJT). MID-W. YORKSHIRE [**64**] Ribblesdale, 30.9 (HS per CHF). N.W. YORKSHIRE [**65**] Hutton Conyers, 3.10 (CHF).

1720 ***Orthonama obstipata* (Fab.) Gem [I][MC?]**
Total no. reported: **329**
Distribution of records:

SW	CS	SE	EA	SI	W	CE	NE	NW	S	I
134	94	59	6	11	3	3	1	3	1	14

Months of occurrence:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	0	1	9	5	10	42	133	158	0

Selected annual totals from fixed traps (10+): W. CORNWALL [**1**] IOS: Longstone, St Mary's – 20 (Scott, 2012a); Maenporth – 12 (Davis, 2012); The Lizard – 34 at six sites (Tunmore, 2012). DORSET [**9**] Portland Bird Observatory – 11 (Cade, 2012). E. KENT [**15**] Dungeness area – 10 at nine sites (Clancy, 2012a); Isle of Thanet – 10 at five sites (Solly *et al.*, 2012).
Earliest dates: S. DEVON [**3**] Holcombe, 6.5 (RFM per BPH). S. HAMPSHIRE [**11**] Ashurst, 3.6 (KG per TJN).
Latest dates: DORSET [**9**] Portland Bird Observatory, 23.11 (MC per LJH). S. HAMPSHIRE [**11**] Southsea, 23.11 (JRL per TJN).
Large single night counts: W. CORNWALL [**1**] Sennen, 20.11 (9) (ME); The Lizard, 21.11 (6) (MT). DORSET [**9**] West Bexington, 1.10 (6) (MJD *et al.*).
Most northerly records: OUTER HEBRIDES [**110**] South Glendale, South Uist, 19.11 (Johnson, 2012).
Selected inland records: MIDDLESEX [**21**] Barnet, 2.10 (RT per CWP). BEDFORDSHIRE [**30**] Biggleswade, 8.11, 12.11 (LRB per AMB); Leighton Buzzard, 13.6 AW per AMB); Luton, 8.11 (AG per AMB). HUNTINGDONSHIRE [**31**] Holmewood Hall, 31.10 (P. Horsnail per BD). WORCESTERSHIRE [**37**] Upper Rochford, 11.9 (anon.). WARWICKSHIRE [**38**] Charlecote, 29.10 (DCGB). MID-W. YORKSHIRE [**64**] Tadcaster, 3.9 (D. Baker per CHF).

1896 ***Itame brunneata* (Thunb.) Rannoch Looper [R][I]**
The following summary relates only to extralimital records of this species that are likely to relate to immigrants.
Total no. reported: **1432**
Distribution of records:

SW	CS	SE	EA	SI	W	CE	NE	NW	S	I
22	175	1094	33	107	0	1	0	0	0	0

Months of occurrence:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	0	0	1431	1	0	0	0	0	0

Selected annual totals from fixed traps: DORSET [**9**] Portland – 7 (Cade, 2012). N. HAMPSHIRE [**12**] Weston Colley – 11 (DGG per TJN). E. SUSSEX [**14**] Icklesham – 23 (IDH per CRP). E. KENT

[**15**] Dungeness area – 43+ at nine sites (Clancy, 2012a); Dymchurch – 48 (JEO); Faversham – 47 (DWJ); Isle of Thanet – 43 at five sites (Solly *et al.*, 2012); Sissinghurst – 66 (SJB). S. ESSEX [**18**] Bradwell-on-sea – 14+ (Dewick, 2012). E. SUFFOLK [**25**] Bawdsey – 9 (Deans, 2012).
Earliest dates: E. SUSSEX [**14**] Icklesham, 1.6 (IDH per CRP).
Latest dates: W. KENT [**16**] Mereworth Woods, Maidstone, 1.7 (TS per IDF).
Large single night counts: W. SUSSEX [**13**] Crawley Down, 6.6 (12) (JHC). E. SUSSEX [**14**] Hurst Green, 7.6 (17) (MP per CRP); Wadhurst, 6.6 (21) (AECA per CRP). E. KENT [**15**] Covert Wood, 6.6 (33), 13.6 (46) (AGJB); Dungeness area, 5.6 (31) (Clancy, 2012a); Dymchurch, 5.6 (18), 6.6 (21) (JEO); Faversham, 6.6 (32) (DWJ); Orlestone, 5.6 (21) (Clancy, 2012a); Sissinghurst, 6.6 (57) (SJB). W. KENT [**16**] Swanley, 7.6 (33) (KB per IDF).
Most northerly records: E. NORFOLK [**27**] Norwich, 7.6 (anon.). WORCESTERSHIRE [**37**] Trench Wood NR, 14.6, first VC record (per S. Whitehouse).
Most westerly records: W. CORNWALL [**1**] Cabilla Woods, 3.6 (TJ); Cury, 4.6 (FTJ).

SPHINGIDAE

1972 ***Agrius convolvuli* (L.) Convolvulus Hawk-moth [I][In]**
Total no. reported: 204
Distribution of records:

SW	CS	SE	EA	SI	W	CE	NE	NW	S	I
51	69	30	14	6	5	4	3	3	2	17

Months of occurrence:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	0	0	1	0	15	106	81	2	0

Selected annual totals from fixed traps (10+): W. CORNWALL [**1**] IOS: St Mary's – 12 at eleven sites (Scott, 2012a). DORSET [**9**] West Bexington – 14 (Eden, 2012).
Earliest dates: E. KENT [**15**] Broadstairs, 14.6 (S. Smith per IDF).
Latest dates: DORSET [**9**] West Bexington, 13.11, 14.11 (RE per LJH). E. SUSSEX [**14**] Hurst Green, 28.10 (MP per CRP).
Large single night counts: DORSET [**9**] West Bexington, 1.10 (5) (MJD per LJH). WEXFORD [**H12**] Kilpatrick, 1.10 (7) (MO'D).
Most northerly records: S.E. YORKSHIRE [**61**] Easington, 20.9 (MFS per CHF); Kilnsea, 12.8 (BRS per CHF). S.W. YORKSHIRE [**63**] Huddersfield, 15.9 (A. Evans per CHF). S. NORTHUMBERLAND [**67**] Lambley, 9.9 (D. Feige per TJT). BERWICKSHIRE [**81**] Eyemouth, 26.8 (2) (AP).
Selected inland records: S.W. YORKSHIRE [**63**] Huddersfield, 15.9 (A. Evans per CHF). MID-W. YORKSHIRE [**64**] Bellflask, 3.9 (B. Morland per CHF); Rimington, 6.10 (BG per CHF).

1984 ***Macroglossum stellatarum* (L.) Humming-bird Hawk-moth [I]**
Minimum no. reported: 2619
N.B. A significantly greater total of *M. stellatarum* was recorded by a Butterfly Conservation survey during the 2011 season; the total of 10,490 adults in fact representing the highest number ever recorded in a single season. However this total is not comparable with previous seasons or any of the totals published within these annual immigration reports due to a targeted online survey for this species combined with television and radio publicity, resulting in a greatly increased level of interest, recorders and reports. For this reason, records were received/sourced through the usual channels for this report and the additional records produced for the BC survey have been ignored. However, these have been summarised in Fox (2012).
Distribution of records:

SW	CS	SE	EA	SI	W	CE	NE	NW	S	I
255	543	380	479	310	76	72	251	91	6	156

Months of occurrence (active):

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	1	3	18	46	596	1128	134	342	234	41	1

Selected annual totals : E. SUSSEX [**14**] Peacehaven – 27 (Pratt, 2012). E. KENT [**15**] Dungeness area – 80 (Clancy, 2012a); Sandwich Bay Bird Observatory – 41 (Hodgson & Beugg, 2012). S.E.

YORKSHIRE [**61**] Spurn – 42 (Spence, 2012). W. CORK [**H3**] Dursey Island – 30 (Scott, 2012b). WATERFORD [**H6**] Tramore Bay – 20 (Bryant & Walsh, 2012).

VC/County summaries: DEVON [**3/4**] 7.4 – 17.10, 59+ adults (per BPH). DORSET [**9**] 2.4 – 16.11, 104 adults (per LJH). ISLE OF WIGHT [**10**] 26.5 – 26.11, 84 adults (per TJN). S. HAMPSHIRE [**11**] 24.2, 3.4 – 1.11, 111 adults (per TJN). S. HAMPSHIRE [**11**] 14.3 – 26.10, 115 adults (per TJN). HERTFORDSHIRE/MIDDLESEX [**20/21**] 2.6 – 9.10, 51 adults (per CWP). SUFFOLK [**25/26**] 30.5 – 13.11, 110+ adults (per AWP). NORFOLK [**27/28**] 18.3 – 7.11, 320+ adults (per J. Wheeler). BEDFORDSHIRE [**30**] 26.5 – 16.10, 57 adults (per AMB). HUNTINGDONSHIRE [**31**] 20.5 – 22.10, 52+ adults (per BD). STAFFORDSHIRE [**39**] 3.6 – 22.10, 19 adults (per DWE). CHESHIRE [**58**] 3.6 – 21.10, 28 adults (per SHH). S. LANCASHIRE [**59**] 13.6 – 10.9, 34 adults (per SMP). N. LANCASHIRE [**60**] 29.7 – 1.10, 15 adults (per SMP). S.E. YORKSHIRE [**61**] 3.4, 19.5 – 11.10, 173+ adults (per CHF). N.E. YORKSHIRE [**62**] 27.6 – 31.7, 31.10, 22 adults (per CHF). S.W. YORKSHIRE [**63**] 28.6 – 9.10, 7 adults (per CHF). MID-W. YORKSHIRE [**64**] 6.6 – 24.10, 31 adults (per CHF). N.W. YORKSHIRE [**65**] 4.6 – 3.7, three adults (CHF). NORTHUMBERLAND [**67/68**] 1.5 – 15.10, 47 adults (per TJT).

Earliest dates (active): DORSET [**9**] Weymouth, 27.3 (per PH). S. HAMPSHIRE [**11**] Gosport, 24.2 (DJAT per TJN). N. HAMPSHIRE [**12**] Magdalen Hill Down, 14.3 (P. Fleet per TJN). E. NORFOLK [**27**] Norwich, 18.3 (A. Easton).

Latest dates (active): ISLE OF WIGHT [**10**] Tennyson Down, 26.11 (C. Dudlay per TJN); WARWICKSHIRE [**38**] Coventry, 1.12, in light trap (C. Potter per DCGB).

Large counts: E. KENT [**15**] Pegwell, 4.7 (15) (Solly *et al.*, 2012); Sandwich, 1.7 (25) (IH per IDF). BEDFORDSHIRE [**30**] Ireland, 1.7 (7) (AMH per AMB). NORTHAMPTONSHIRE [**32**] Woodnewton, 8.9 (10) (N. Smith). S.E. YORKSHIRE [**61**] Kilnsea, 29.6 (6) (P. Martin per CHF). WATERFORD [**H6**] Carrickavrantry, 26.6 (7) (TB).

Most northerly records: DUMFRIES-SHIRE [**72**] Dumfries, 17.7 (JHC). OUTER HEBRIDES [**110**] South Uist: Grimsay, 12.10, Lochmaddy, 26.10, South Glendale, 30.9 (Johnson, 2012). ORKNEY ISLANDS [**111**] Mainland, 27.7 (2) (JHC).

Immature stages/Evidence of breeding: WARWICKSHIRE [**38**] Ufton Fields, 21.7, larva (B. Laney). S. LANCASHIRE [**59**] Wirral, 27.7, larva (with three more found over next ten days) (M. Pons). WEXFORD [**H12**] The Raven, 4.8, larva (IR).

NOCTUIDAE

2091 *Agrotis ipsilon* (Hufn.) Dark Sword-grass [I]

Selected annual totals from fixed traps (90+): W. CORNWALL [**1**] IOS: Longstone, St Mary's – 312 (Scott, 2012a); Maenporth – 170 (Davis, 2012); The Lizard – 162 at three sites (Tunmore, 2012). DORSET [**9**] Portland Bird Observatory – 205 (Cade, 2012). E. SUSSEX [**14**] Icklesham – 146 (Hunter, 2012). E. KENT [**15**] Dungeness area – 184 at nine sites (Clancy, 2012a); Isle of Thanet – 252 at five sites (Solly *et al.*, 2012); Sandwich Bay Bird Observatory – 142 (Hodgson & Beugg, 2012). S. ESSEX [**18**] Bradwell-on-sea – 147 (Dewick, 2012). S.E. YORKSHIRE [**61**] Spurn – 112 (Spence, 2012). WATERFORD [**H6**] Tramore Bay – 91 (Bryant & Walsh, 2012).

Earliest dates: ISLE OF WIGHT [**10**] Totland, 10.2 (SAK-J). S. HAMPSHIRE [**11**] South Baddersley, 9.2 (RC per TJN); Wickham Common, 10.2 (K. Coker per TJN). W. SUSSEX [**13**] Middleton-on-sea, 11.2 (IDM, in Clancy 2012b). E. KENT [**15**] Lydd-on-sea, 10.2 (DB).

Latest dates: W. CORNWALL [**1**] Little Treleaver, 21.12 (J. Foster). DORSET [**9**] Chickerell, 10.12 (C. Pinder).

2119 *Peridroma saucia* (Hb.) Pearly Underwing [I]

Total no. reported: 371

Distribution of records:

SW	CS	SE	EA	SI	W	CE	NE	NW	S	I
104	129	51	40	7	4	7	8	5	0	16

Months of occurrence:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	1	4	5	9	18	28	68	169	63	4

Selected annual totals from fixed traps (20+): W. CORNWALL [**1**] IOS: Longstone, St Mary's – 37 (Scott, 2012a). DORSET [**9**] Portland Bird Observatory – 47 (Cade, 2012); West Bexington – 21 (Eden, 2012). E. KENT [**15**] Dungeness area – 21 at nine sites (Clancy, 2012a).

Earliest dates: S. DEVON [**3**] Colyford, 21.3 (PV per BPH).

Latest dates: W. CORNWALL [**1**] IOS: Longstone, St Mary's, December (2) (Scott, 2012a); The Lizard, December (1) (Tunmore, 2012). ISLE OF WIGHT [**10**] Bonchurch, 3.12 (JH).
Large single night counts: DORSET [**9**] Portland, 27.10 (12+) (BFS); West Bexington, 1.10 (9) (MJD *et al.*).
Most northerly records: S. LANCASHIRE [**59**] Walmer Bridge, 7.10 (G. Jones per SMP). N. LANCASHIRE [**60**] Heysham, 29.9 (DJH per SMP); Morecambe, 3.10, 2.11 (J. Girdley per SMP). S. NORTHUMBERLAND [**67**] Tynemouth, October (1) (Tams, 2012).
Selected inland records: OXFORDSHIRE [**23**] Oxford, 8.10 (DR). HUNTINGDONSHIRE [**31**] Old Weston, 8.6 (K. Royles per BD). NORTHAMPTONSHIRE [**32**] Woodnewton, 12.11 (N. Smith). HEREFORDSHIRE [**36**] Bodenham, 3.11 (R. Hemming). CHESHIRE [**58**] Runcorn, 3.6 (SHH *et al.*). S.W. YORKSHIRE [**63**] Auckley, 5.10 (SRS per CHF).

2195 ***Mythimna vitellina* (Hb.) Delicate [I][MC?]**
Total no. reported: 463
Distribution of records:

SW	CS	SE	EA	SI	W	CE	NE	NW	S	I
221	167	59	8	2	0	0	3	0	0	3

Months of occurrence:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	1	5	6	12	3	162	243	30	0

Selected annual totals from fixed traps (20+): W. CORNWALL [**1**] IOS: Longstone, St Mary's – 60 (Scott, 2012a); The Lizard – 38 at six sites (Tunmore, 2012). DORSET [**9**] Portland Bird Observatory – 30 (Cade, 2012); West Bexington – 31 (Eden, 2012).
Earliest dates: W. CORNWALL [**1**] IOS: Longstone, St Mary's, 14.4 (M. Scott).
Latest dates: W. CORNWALL [**1**] Land's End, 15.11 (GBH). W. SUSSEX [**13**] Bracklesham, 13.11 (DL per CRP).
Large single night counts: DORSET [**9**] West Bexington, 1.10 (17) (MJD *et al.*).
Most northerly records: S.E. YORKSHIRE [**61**] Kilnsea, 4.10 (2) (PAC per CHF). N.E. YORKSHIRE [**62**] Haxby, 25.9 (T. Crawford per CHF).
Selected inland records: N. HAMPSHIRE [**12**] Upton, 2.9 (GCE per TJN). W. SUSSEX [**13**] Crawley Down, 30.10 (JHC). E. GLOUCESTERSHIRE [**33**] Horsley, 1.10 (P. Cranswick).

2385 ***Spodoptera exigua* (Hb.) Small Mottled Willow [I][In]**
Total no. reported: 538
Distribution of records:

SW	CS	SE	EA	SI	W	CE	NE	NW	S	I
113	309	61	10	12	9	10	5	5	0	4

Months of occurrence:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	13	0	174	233	14	66	46	2	0

Selected annual totals from fixed traps (10+): W. CORNWALL [**1**] IOS: Longstone, St Mary's – 28 (Scott, 2012a); Maenporth – 14 (Davis, 2012); The Lizard – 13 at six sites (Tunmore, 2012). DORSET [**9**] Portland Bird Observatory – 94 (Cade, 2012).
Earliest dates: DORSET [**9**] Puddletown, 7.4 (HWH per LJH).
Latest dates: S. HAMPSHIRE [**11**] Ashurst, 4.11 (KG per TJN). E. SUFFOLK [**25**] Landguard, 5.11 (NO per AWP).
Large single night counts: DORSET [**9**] Portland, 27.6 (65 at four sites) (MC *et al.* per LJH); Tincleton, 9.7 (14) (R. Cottle per LJH).
Most northerly records: S. LANCASHIRE [**59**] Hutton, 4.7 (A. Barker per SMP). N. LANCASHIRE [**60**] High Tatham, 4.7 (PJM per SMP). MID-W. YORKSHIRE [**64**] Bellflask, 5.7 (B. Morland per CHF). N.W. YORKSHIRE [**65**] Nosterfield, 1.7 (CHF, JW).
Selected inland records: N. HAMPSHIRE [**12**] Longstock, 27.6 (GCE per TJN); Weston Colley, 31.7 (DGG per TJN). CAMBRIDGESHIRE [**29**] Earith, 8.9 (D. Griffiths). BEDFORDSHIRE [**30**] Upper

Caldecote, 24.8 (M. Burgess per AMB). HUNTINGDONSHIRE [**31**] Earith, 8.9 (D. Griffiths per BD); Holme Fen, 4.7 (BD); Old Weston, 14.7, 9.9 (K. Royles per BD). HEREFORDSHIRE [**36**] Bodenham, 10.9, 28.9, 29.10 (R. Hemming). WORCESTERSHIRE [**37**] Norchard, 13.9 (M. Southall). WARWICKSHIRE [**38**] Bishops Itchington, 15.7 (MK per DCGB). MONTGOMERYSHIRE [**47**] Middletown, 11.7 (per PRW). S.W. YORKSHIRE [**63**] West Melton, 6.7 (HEB per CHF). MID-W. YORKSHIRE [**64**] Bellflask, 5.7 (B. Morland per CHF). N.W. YORKSHIRE [**65**] Nosterfield, 1.7 (CHF, JW).

2400 ***Helicoverpa armigera*** **(Hb.) Scarce Bordered Straw [I][In]**
Total no. reported: 363
Distribution of records:

SW	CS	SE	EA	SI	W	CE	NE	NW	S	I
97	152	72	17	3	3	2	4	3	0	10

Months of occurrence:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	2	0	5	5	3	100	209	38	0

Selected annual totals from fixed traps (20+): W. CORNWALL [**1**] Maenporth – 23 (Davis, 2012); The Lizard – 26 at six sites (Tunmore, 2012).
Earliest dates: W. CORNWALL [**1**] Maenporth, 5.4 (GD). DORSET [**9**] Southwell, Portland, 29.4 (DS per LJH).
Latest dates: DORSET [**9**] East Lulworth, 24.11 (LJH).
Large single night counts: DORSET [**9**] West Bexington, 1.10 (16) (MJD *et al.*).
Most northerly records: N. LANCASHIRE [**60**] Heysham, 27.9 (DJH per SMP); Lightfoot Green, 3.10 (SMP); Sunderland Point, 20.7 (J. Girdley per SMP).
Selected inland records: N. HAMPSHIRE [**12**] Bishops Sutton, 10.10 (PT per TJN). W. SUSSEX [**13**] Crawley Down, 9.10 (JHC). BEDFORDSHIRE [**30**] Biggleswade, 4.11 (LRB per AMB). WORCESTERSHIRE [**37**] Norchard, 13.9, 8.10 (2) (M. Southall). WARWICKSHIRE [**38**] Bidford-on-Avon, 2.10 (RMC per DCGB). MONTGOMERYSHIRE [**47**] Commins Coch, 4.10, 9.10 (PRW).
Importations: MORAYSHIRE [**95**] Boat of Garten, 25.12, larva found indoors on imported carnations (adult emerged 6.2.12) (M. Taylor).

2403 ***Heliothis peltigera*** **(D. & S.) Bordered Straw [I]**
Total no. reported: 153
Distribution of records:

SW	CS	SE	EA	SI	W	CE	NE	NW	S	I
13	82	23	20	8	0	6	0	1	0	0

Months of occurrence:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	16	6	26	60	4	22	18	1	0

Selected annual totals from fixed traps (10+): DORSET [**9**] West Bexington – 10 (Eden, 2012). E. SUFFOLK [**25**] Landguard – 14 (Odin, 2012).
Earliest dates: S. HAMPSHIRE [**11**] Dybdale, 8.4 (M. Pugh per TJN). W. SUSSEX [**13**] Findon, 7.4 (MAS per CRP).
Latest dates: W. SUSSEX [**13**] Upper Beeding, 4.11 (J. Steedman per CRP).
Most northerly records: N. LANCASHIRE [**60**] Lightfoot Green, 3.10 (SMP).
Selected inland records: N. HAMPSHIRE [**12**] Overton, 22.4 (A. Cross per TJN). HERTFORDSHIRE [**20**] Bayfordbury, 20.9 (2) (L. Goodwin); Bishops Stortford, 5.7 (JF per CWP). BEDFORDSHIRE [**30**] Biggleswade, 3.7 (S. Blain per AMB); Lower Stondon, 11.7 (AMB); Upper Caldecote, 10.8 (M. Burgess per AMB). HUNTINGDONSHIRE [**31**] Great Staughton, 29.4 (P. Bissell per BD). HEREFORDSHIRE [**36**] Bodenham, 14.7, 30.7 (R. Hemming). WARWICKSHIRE [**38**] Bilton, 20.6 (D. Cox per DCGB); Kenilworth, 19.4 (MK per DCGB); Long Lawford, 20.4 (JDH per DCGB).
Immature stages: S. DEVON [**3**] East Prawle, 7.8, six larvae on *Pulicaria dysenterica* (BPH). E. SUSSEX [**14**] Cuckmere Haven, Seaford, 10.8, single larva (JHC).

2441 ***Autographa gamma*** **(L.) Silver Y [I]**
Selected annual totals from fixed traps (500+): DORSET [**9**] Portland Bird Observatory – 528 (Cade, 2012). E. KENT [**15**] Isle of Thanet – 585 at five sites (Solly *et al.*, 2012). S. ESSEX [**18**] Bradwell-on-sea – 1423 (Dewick, 2012). S.E. YORKSHIRE [**61**] Spurn – 1014 (Spence, 2012).
Earliest dates: W. CORNWALL [**1**] IOS: Longstone, St Mary's, February (1) (Scott, 2012a).
Latest dates: S. HAMPSHIRE [**11**] Fareham, 26.12 (TT per TJN). E. KENT [**15**] Ramsgate, 26.12, 27.12 (PM, FS per IDF). S. ESSEX [**18**] Bradwell-on-sea, 26.12.
Large single night counts: S. ESSEX [**18**] Bradwell-on-sea, 2.9 (107), 16.9 (107) (Dewick, 2012). S.E. YORKSHIRE [**61**] Reighton, 22.8 (250) (D. Shenton per CHF); Spurn, 23.7 (96) (BRS per CHF).
Large diurnal/dusk counts: W. CORK [**H3**] Dursey Island, 23.4 (52), 24.4 (50+) (Scott, 2012b).
Immature stages: CHESHIRE [**58**] Kelsall, 10.9, 30 larvae on broccoli (B. Bull per SHH).

ANNEX 3: SELECTED 2011 CHANNEL ISLANDS [VC 113] RECORDS

0386 ***Tebenna micalis*** **(Mann)**
Guernsey: Rue des Bergers, 30.6 (Lawlor, 2012); St Etienne, 1.10 (Lawlor, 2012).

1403 ***Diasemiopsis ramburialis*** **(Dup.)**
Guernsey: La Broderie, 8.11 (PDMC).

1404 ***Spoladea recurvalis*** **(Fabr.)**
Guernsey: Le Chene, 1.10 (Lawlor, 2012).

1492 ***Oxyptilus laetus*** **(Zell.)**
Guernsey: St John, 29.6 (per R. Austin).

1567 ***Lampides boeticus*** **(L.) Long-tailed Blue**
Alderney: No site, 15.10 (DJW).

1599 ***Araschnia levana*** **(L.) European Map**
Jersey: St Martin, 26.5 (R. Perchard).

1888b ***Stegania cararia*** **(Hb.) Ringed Border**
Guernsey: La Chene, 26.6, first Guernsey record (Lawlor, 2012).

1896 ***Itame brunneata*** **(Thunb.) Rannoch Looper**
Alderney: Essex Farm, 3.6 (6), 4.6 (20) (DJW). **Guernsey**: 25 records at five sites, 4.6 – 25.6 (Lawlor, 2012).

1973 ***Acherontia atropos*** **(L.) Death's-head Hawk-moth**
Alderney: Essex Farm, 23.9 (DJW).

2355 ***Luperina dumerilii*** **(Dup.) Dumeril's Rustic [I]**
Guernsey: Le Chene, 25.9 (Lawlor, 2012).

2408 ***Eublemma parva*** **(Hb.) Small Marbled**
Alderney: Essex Farm, 24.6, 4.7 (2) (DJW). **Guernsey**: La Broderie, 4.7 (Lawlor, 2012); Route de Carteret, 3.7, 4.7, 27.7 (Lawlor, 2012).

2407a ***Eublemma purpurina*** **(D. & S.) Beautiful Marbled**
Guernsey: Route de Carteret, 29.9 (Lawlor, 2012).

2423 ***Nycteola asiatica*** **(Krul.) Eastern Nycteoline**
Alderney: Essex Farm, 28.3 (DJW).

2453 ***Catocala electa*** **(View.) Rosy Underwing**
Guernsey: La Broderie, 23.8 (PDMC).

APPENDIX 1

Corrections/Additions to 2010 report

0825a ***Tuta absoluta*** **(Meyr.) [In][I?]**
WORCESTERSHIRE [**37**] Evesham, July, to light (P. Clement).

1317 ***Catoptria verellus*** **(Zinck.) [I]**
S. DEVON [**3**] Colyford, 24.7, first VC record (P. Vernon, in Langmaid & Young, 2012).

1965a ***Pseudocoremia suavis*** **(Butler) Common Forest Looper [In]**
W. CORNWALL [**1**] Greatwork, 9.6, 27.6, 29.9 (TJ).

2467 ***Lygephila craccae*** **(D. & S.) Scarce Blackneck [R][I/V]**
E. SUSSEX [**14**] Eastbourne, 7.8, first VC record (D.E. Lester per CRP).

APPENDIX 2

Corrections/Additions to 2009 report

1492 ***Oxyptilus laeta*** **(Zell.) [I]**
S. DEVON [**3**] West Hill, 28.5 (PJB per RJH).

APPENDIX 3

Corrections/Additions to 2006 report

1630a ***Lacosoma chiridota*** **(Grote) Scalloped Sack-bearer In]**
S.W. YORKSHIRE [**63**] Balby, 13.8 (found indoors), new to Britain (per CHF, via PKG).

Initials of recorders

AB	Batten, A.	BH	Hancock, B.	DRML	Long, D.R.M.
AC	Cleave, A.	BPH	Henwood, B.P.	DS	Saunders, D.
AEB	Butler, A.& E.	BRD	Dykes, B.R.	DT	Taylor, D.
AG	Grimsey, A.	BRS	Spence, B.R.	DU	Urquart, D.
AGJB	Butcher, A.G.J.	BS	Sale, B.	DVM	Manning, D.V.
AHD	Dobson, A.H.	CA	Atkins, C.	DW	Walker, D.
AJ	Johnson, A.	CB	Bentley, C.	DWE	Emley, D.W.
AJK	Kolaj, A.J.	CG	Glanfield, C.	DWJ	Jenner, D.W.
AK	Korycinska, A.	CHF	Fletcher, C.H.	EG	Goodyear, E.
AL	Lawrence, A.	CM	Moore, C.	FS	Solly, F.
AMB	Banthorpe, A. & M.	CRP	Pratt, C.R.	FTJ	Johns, F.T.
AMH	Muir-Howie, A.	CWP	Plant, C.W.	GAC	Collins, G.A.
ANG	Graham, A.N.	DB	Beck, D.	GAH	Henwood, G.A.
AR	Rouse, A.	DCGB	Brown, D.C.G.	GBH	Hocking, G.B.
ARC	Collins, A.R.	DCJ	Jode, D. & C.	GBS	Senior, G.B.
ASE	Ezard, A.S.	DEP	Paull, D.E.	GCE	Evans, G.C.
ASH	Harmer, A.S.	DF	Foot, D.	GD	Davis, G.
ASP	Park, A. & S.	DG	Grundy, D.	GG	Geiger, G.
AW	Whitney, A.	DGG	Green, D.G.	GHJM	Meredith, G.H.J.
AWP	Prichard, A.W.	DH	Houghton, D.	GJJ	Jarvis, G. & J.
BBa	Banson, B.	DJAT	Tinling, D.J.A.	GL	Lyons, G.
BBe	Bewsher, B.	DJH	Holding, D.J.	GMT	Tordoff, G.M.
BBo	Boothroyd, B.	DJK	Kingman, D. & J.	GW	Walbridge, G.
BD	Dickerson, B.	DJLA	Agassiz, D.J.L.	HEB	Beaumont, H.E.
BE	Elliot, B.	DJW	Wedd, D.J.	HS	Sergeant, H.
BFS	Skinner, B.F.	DL	Lee, D.	HWH	Wood-Homer, H.
BG	Gethings, B.	DR	Redhead, D.	IAR	Roberts, I.A.

IC	Cook, I.	LJH	Hill, L.J.	PT	Thompson, P.
IDF	Ferguson, I.D.	LRB	Burgess, L.R.	PV	Vernon, P.
IDH	Hunter, I.D.	MAS	Snelling, M.A.	RA	Arthur, R.
IDM	Masters, I.D.	MB	Blencowe, M.	RAR	Raymond, R.A.
IF	Fletcher, I.	MC	Cade, M.	RB	Barfoot, R.
IH	Hodgson, I.	MCM	Marsh, M.C.	RBW	Wynn, R.B
IL	Lang, I.	MD	Dale, M.	RC	Coomber, R.
IR	Rippey, I.	ME	Elliott, M.	RE	Eden, R.
IRT	Thirlwell, I.R.	MEH	Hicks, M.E.	RF	Fox, R.
JBH	Higgott, J.B.	MEW	Wrake, M.E.	RFM	McCormick, R.F.
JBK	Kemp, J.B.	MFS	Stoyle, M.F.	RGB	Bliss, R.G.
JC	Clifton, J.	MG	Gibbons, M.	RH	Hayward, R.
JCN	Nicholls, J.C.	MJ	Jeffes, M.	RJH	Heckford, R.J.
JCW	Winterbottom, J.C.	MJD	Deans, M.J.	RJW	Wolton, R.J.
JDH	Hall, J. & D.	MJH	Hammond, M.J.	RL	Lambert, R.
JE	Edwards, J.	MK	Kennard, M.	RMC	Cox, R.M.
JEC	Chainey, J.E.	MLO	Opie, M.L.	RP	Palmer, R.
JEO	Owen, J.E.	MO'D	O'Donnell, M.	RRC	Cook, R.R.
JF	Fish, J.	MP	Phillips, M.	SAK-J	Knill-Jones, S.A.
JK	Knowler, J.	MRG	Green, M.R.	SDB	Beavan, S.D.
JMc	McGill, J.	MSP	Parsons, M.S.	SDSB	Bosanquet, S.D.S.
JMH	Hicks, J.M.	MT	Tunmore, M.	SDT	Taylor, S.D.
JO	Oughton, J.	NJ	Jarman, N.	SHH	Hind, S.H.
JP	Platts, J.	NM	Montegriffo, N.	SI	Ingram, S.
JRL	Langmaid, J.R.	NO	Odin, N.	SJB	Broyd, S.J.
JS	Scanes, J.	NS	Sherman, N.	SMP	Palmer, S.M.
JT	Thorogood, J.	OL	Leyshon, O.	SN	Nash, S.
JTR	Radford, J.T.	OW	Woodland, O.	SO	Ogden, S.
JW	Warwick, J.	PAC	Crowther, P.A.	SP	Pemberton, S.
JWC	Cooper, J.W.	PB	Beraet, P.	SPC	Clancy, S.P.
KAN	Naylor, K.A.	PBJ	Bruce-Jones, P.	SRS	Sowden, S.R.
KB	Button, K.	PC	Clarke, P.	SS	Stokes, S.
KBW	Wills, K.B.	PD	Durnell, P.	TB	Bryant, T.
KG	Godfrey, K.	PDC	Chapman, P.D.	THF	Freed, T.H.
KGMB	Bond, K.G.M.	PDMC	Costen, P.D.M.	TJ	James, T.
KJP	Plumridge, K.J.	PEB	Bryant, P.E.	TJN	Norriss, T.J.
KK	Knights, K.	PHS	Sterling, P.H.	TJT	Tams, T.J.
KNA	Alexander, K.N.	PJB	Baker, P.J.	TM	Morriss, T.
KR	Redshaw, K.	PJM	Marsh, P.J.	TP	Phillips, T.
KS	Saul, K.	PK	Kitchener, P.	TS	Steele, T.
LACT	Truscott, L.A.C.	PKG	Greaves, P.K.	TT	Tindale. T.
LDH	Hankinson, L. & D.	PL	Lister, P.	ZH	Hinchcliffe, Z.
LH	Hirst, L.	PM	Milton, P.		
LHO	Oakes, L. & H.	PRW	Williams, P.R.		

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Gold Spangle *Autographa bractea* ([D. & S.]) (Lep: Noctuidae) in Peterborough in 2014

One of the more interesting captures in 2014 in the Robinson trap I operate in my garden in Peterborough (VC 34, Northamptonshire) was of a Gold Spangle *Autographa bractea* on the night of 26 June. My general comments in Waring *et al* (2009. Field Guide to the Moths of Great Britain & Ireland. Second edition. British Wildlife Publishing) that adults of this predominantly northern species occasionally wander from the north Midlands into East Anglia and the south of England, or may arrive by immigration, appear still to be true. According John Ward and Mark Hammond , in their role as County Moth Recorders, this moth has been recorded less than a dozen times in the vice-county since the first on 4 September 1917 (by T. Mobbs at Kettering). Some more recent records include five singletons from the 1980s at different sites, all mid to late July, and one on 2 August 2013 (by Ron Follows at Ring Haw). Note that the late June date of my individual is two to three weeks earlier than the previous records in Northamptonshire and that the moth was in very good condition. The early date suggests to me that this individual may well have been an immigrant from a country where the life-cycle is more advanced than typical in the British Isles. However, there were no obviously immigrant moths in the rest of the all-night catch of 164 macro-moths of 37 species in which this Gold Spangle occurred, although there had been a Silver Y moth *Autographa gamma* (L.) recorded a few nights before – on 21 June.

The only other individuals of the Gold Spangle I have seen in the East Midlands & East Anglian regions were a male and a mated female in Cranwich Heath Plantation near Mundford, Norfolk, on 23 July 1988, during a BENHS field meeting; the female laid 150 fertile eggs, some of which were reared by Roy McCormick. Ken Saul, Norfolk County Moth Recorder, has kindly communicated that as far as he is aware there have only been five further Norfolk records mine at Cranwich in 1988 –at Hickling, August 1989, Tim Peet; West Lynn, 19 July 1994, Robert Wesley; Dersingham Bog, 29 July 2007, Ash Murray; Hunstanton, 27 July 2013, Chris Mills and Overstrand, 7 August 2013, Greg Bond. He continues that he presumes all of these to be migrants/wanderers since there are no larval or other breeding records.

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NOCTUA JANTHE (BORKHAUSEN, 1792) (LEP.: NOCTUIDAE) – NEW FOR MONTENEGRO AND CONFIRMED FOR BULGARIA

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Abstract

Noctua janthe (Borkhausen, 1792) is reported here for a first time from Republic of Montenegro (Crna Gora). Some additional data about its distribution on the Balkan Peninsula are presented and discussed.

Keywords: Montenegro, Bulgaria, Lepidoptera, Macrolepidoptera, *Noctua*.

Introduction

Von Mentzer, Moberg & Fibiger, 1991 state that under the name *Noctua janthina* in fact there is complex of three species – *Noctua janthe* (Borkhausen, 1792), *Noctua janthina* ([Denis & Schiffermüller], 1775) and *Noctua tertia* von Mentzer, Moberg & Fibiger, 1991. They clarified taxonomy of these three species, but their respective ranges remained unclear. According to them, the distribution of *Noctua janthe* is probably limited to north-east Africa and western and central Europe. Data from the Balkans (Greece, Pindos) require confirmation. Hacker (1992: 366) also accepted the report from Greece as doubtful. According to Fibiger (1993) *Noctua janthe* is an Atlantico-Mediterranean species, *N. janthina* and *N. tertia* are Mediterranean-Asiatic species.

Reports for the Balkans

The first reliable report for *N. janthe* from the Balkan Peninsula is that of Beshkov & Misja (1995: 358) from Albania, (Librazhd). They illustrated in monochrome a single female specimen, the genitalia of which were examined. Beshkov (2000: 166) reported six specimens of *Noctua janthe* in the collection of Institute of Zoology, Bulgarian Academy of Sciences (Sofia), originating from south-west Bulgaria at the Belassitza Mountains, 04-05.vi.1977, Al. Slivov leg. and two specimens collected September 1997 in the Treska Gorge, Skopje Region, Republic of Macedonia. A single female specimen from Macedonia is illustrated there (at Plate 9, fig. 12). These are the first reports for Bulgaria and for the Republic of Macedonia, which confirm the presence of *N. janthe* in the Balkans. Beshkov & Langourov (2004: 657) reported under a question mark a report of *Noctua janthe* from the Eastern Rhodopes mountains of Bulgaria at Madzharovo. However, this record, based on an unpublished observation by Peter Davey, is very possibly the result of a misidentification, since the common *N. janthina* and *N. tertia* are not recorded by him.

Both *N. janthina* and *N. tertia*, together with *N. janthe*, occur in Bulgaria; the most common of which is *N. janthina*. In southern Bulgaria *N. janthina* is sympatric with

Plate 1. *Noctua janthe*, male. Montenegro, Žabljak district, Uskočki Canyon near Pirlitor, vicinity of Vrela village, 1273m, N43°09'42"; E019°13'53", 06.viii.2014. 1. upperside, 2. underside.

N. tertia and probably some of the records for *N. janthina* here refer to *N. tertia*. It seems that in south-west Bulgaria, in the vicinity of Petrich, all three species are sympatric – an opinion also expressed by Beshkov (2000: 165). *N. janthe* is known also from Central-Western Serbia in the Jelova Gora Mountains of the Užice Region (Dodok, 2007).

New reports

Noctua janthe is reported here for a first time from the Republic of Montenegro:

Žabljak district, at Uskočki Canyon near Pirlitor, in the vicinity of Vrela village, 1273m., N43°09'42": E019°13'53", 06.viii.2014, S. Beshkov leg., 3 males.

Pirlitor is situated between Tara Canyon and Uskočki Canyon, on the edge. Warm air rises up through these canyons making this edge area warmer than adjacent areas on the Jezerska površ plateau. Together with afforested areas and slopes, this climate condition makes Pirlitor, Uskočki Canyon, Vrela village and Međužvalje village favourable for different species, which can be found here and very rarely on Jezerska površ. For example, harvest comes early here, in comparison to the neighbouring villages.

New reports of *Noctua janthe* for Bulgaria are as follows:

Central Rhodopes mountains, above Trigrad Village (above Dyavolskoto Gurlo cave), 1288m, N41°36'43"; E024°22'41", 15.viii.2014, limestone rocks and meadow with *Juniperus* and *Morina persica* near coniferous forest, S. Beshkov & S. Abadjiev leg., 4 males and 2 females.

Other new data from the present author from south-west Bulgaria at the Belassitza Mountains confirm the previous report from there:

above Petrich on the Louda Mara River, 174m, N41°22'03"; E023°12'30", *Platanus, Castanea, Corylus*, 09.vii.2010, 1 female and 29.viii.2010, 7 males and 1 female;

above Petrich on the Louda Mara River, 470m, N41°22'21"; E023°12'24", 29.viii.2010, 3 males;

between Belassitza and Kongour chalets, 730m, N41°22'03": E023°12'02", 27.viii.2010, *Castanea* forest, 3 males;

below Belassitza Chalet on the road to Petrich, 514m, N41°22'27"; E023°12'13", 28.viii.2010, *Quercus-Castanea* forest and clearing, 5 males;

below Belassitza Chalet on the road to Petrich, 614m, N41°22'26"; E023°12'01", 28.viii.2010, *Castanea* forest, 2 males;

between Varshiloto and Konguro summit, 1730m, N41°20'00"; E023°10'36", 07.viii.2010, *Vaccinium, Juniperus*, subalpine slopes, 1 male.

Localities on the Balkans, especially these in Belassitza suggest that *N. janthe* inhabits Greece, most likely western Greece, the Rhodopes Mountains and the Greek

part of the Belassitza Mountains, known in Greece as Belles Oros. *Noctua janthe* seems to be a western species which ranges east no further than the Central Rhodopes in Bulgaria. The discovery near Trigrad extends its range more than 100 km east.

Taxonomy

Prior to the publication of von Mentzer, Moberg & Fibiger (1991) the published taxonomy of the three taxa, all of which were placed in subgenus *Euschesis* Hübner, [1821], was confused. Today, however, *N. janthe* can be distinguished clearly from the other representatives of the subgenus by the genitalia (everted vesica) and habitus. The most important feature is the narrow black fascia in the upperside of the hindwings which ends at the middle of the costal margin and never reaches the black patch from the wing base. Additionally, the costal area of the hindwing at the middle is orange. On the underside the black fascia of the hind wing is almost the same size and shape as on the upperside, but terminates away from the costal margin, between veins M1 and R.

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Larva of Rosy Marsh moth *Coenophila subrosea* (Stephens, 1829) (Lep.: Noctuidae) found feeding in the wild on *Vaccinium myrtillus*, a previously unrecorded foodplant and on *Andromeda polifolia*

On 1 June 2013 we visited Cors Caron National Nature Reserve, Cardiganshire (VC 46) to investigate the larval habits of Rosy Marsh moth *Coenophila subrosea*. We were aware that the NNR warden, Ian Tillotson, had previously found larvae on Crowberry *Empetrum nigrum* on the site. We were also aware that Bog Rosemary *Andromeda polifolia* is a known foodplant. Access to where he had found larvae within the central part of the reserve on the raised bog is not easy. We undertook a long walk through the difficult terrain during daylight hours to survey the area for likely spots to search for larvae at night. *Andromeda* was thinly scattered over the raised bog, but nowhere particularly dense. After dark we repeated our walk into the reserve and searched by torchlight. Once it was fully dark and we had reached the raised bog, after about 15 minutes of searching we found one larva of *C. subrosea* actively feeding on *Andromeda*, but there were no others nearby. We then moved to an area of slightly lusher ground vegetation we had noted during the day, among patches of stunted Downy Birch *Betula pubescens* trees. There we found three more *C. subrosea* larvae at rest on *Andromeda* and also two on Bilberry *Vaccinium myrtillus*. One was seen eating the flowers of the latter plant. As far as we are aware the larvae of this moth have not hitherto been recorded as feeding on *Vaccinium myrtillus*. Other plants at this spot included Cranberry *Vaccinium oxycoccos* and *Empetrum nigrum*, but no larvae were found on them.

Porter (1997. *The Colour Identification Guide to Caterpillars of the British Isles*. Viking) gives Bog Myrtle *Myrica gale* as the foodplant. Fowles, Bailey and Hale (2004. *Journal of Insect Conservation* **8**: 149-158) surveyed for larvae over a 16 year period (1998 – 2003) at Cors Fochno, Wales, part of the Dyfi National Nature Reserve, where the moth had been discovered in 1967. They reported 471 larvae, 418 (88.1%) of which were on *Myrica* and one third (156) were not feeding at the time. Four of the remaining larvae were seen feeding, two on *Andromeda* and two on Broad-leaved Cottongrass *Eriophorum angustifolium*. Other plants that larvae were found resting but not feeding on were Hare's-tail Cottongrass *Eriophorum vaginatum*, Heather *Calluna vulgaris* and Cross-leaved Heath *Erica tetralix*.

Tillotson and Spitzer (1998. *Entomologist's Gazette* **49**: 75-89) discuss the moth's occurrence at what they refer to as "a second site in Wales"; this is actually Cors Caron, where it was discovered in 1976. They state that *Myrica* is absent there and list alternative foodplants recorded in Europe. These are Bog Bilberry *Vaccinium uliginosum*, *Empetrum* spp., *Calluna vulgaris* and *Andromeda polifolia*. Referring to Cors Caron they say: "In spite of many years of annual nocturnal search at this site, examining *Andromeda, Calluna, Erica, Vaccinium myrtillus* and even *Salix,* no sign of the larva was recorded until 1995 when it was discovered feeding on *Empetrum nigrum*". They go on to say "On the second site, no evidence has been found to suggest that *C. subrosea* uses *Andromeda* at any stage in its larval cycle. In the Czech Republic and in Austria, *Andromeda polifolia* is considered to be the most important foodplant."

Plate 1. *Coenophila subrosea* larva feeding on *Vaccinium myrtillus* at night.

Plate 2. *Coenophila subrosea* larva feeding on *Andromeda polifolia* at night.

Although the adult moth appears quite widespread at Cors Caron, Ian Tillotson considered that larvae may be hard to find. At the Cors Fochno site, they are well known to drop at the slightest disturbance from Bog Myrtle they have climbed, falling into the vegetation below. At Cors Caron they would similarly disappear into a deep *Sphagnum* moss layer. However, rather surprisingly, none of the six larvae we found fell off the plants they were clinging to, and they were obligingly easy to photograph at night in their natural resting or feeding position.

In summary, as far as we are aware, the foodplants currently known to be used by *C. subrosea* in the wild in Britain are *Andromeda polifolia*, *Empetrum nigrum*, *Eriophorum angustifolium*, *Myrica gale* and *Vaccinium myrtillus*.

We are grateful to Ian Tillotson for permission to search for larvae at Cors Caron National Nature Reserve.

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AES NEWS

AES MEMBERSHIP LIST

After an absence of some years, it is intended to reinstate publication of the Amateur Entomologist's Society (AES) membership list. Subscribers to this journal are automatically regarded as members of the AES and are eligible for all member benefits. However, whilst the AES are the current owners of *Entomologist's Record and Journal of Variation*, subscribers to this journal are not automatically included in the AES membership list. Due to legislative changes we now have to ask people if they want to be included in the list. If you would like your details included in the list, and you have not already told us, please email membership@amentsoc.org to let us know, as soon as possible.

AES ANNUAL MEMBERS' DAY and AGM

Saturday 25th April 2015, Liverpool Museum

Our 80th anniversary AGM will take place on Saturday 25th April at the Entomology Department of the World Museum Liverpool, William Brown Street, Liverpool, Merseyside L3 8EN. The Museum hosts one of the largest insect collections in Britain. As usual, we will be pleased to have members of local entomological and natural history societies attend, with information on their societies if they wish. The Annual Leonard Tesch Lecture will be followed by tours of the Museum and its collections, and other activities, with an emphasis on networking this year.

The AGM will take place at midday. All are welcome, there is no need to book in advance.

SUBSCRIBER NOTICES

Butterflies of Hertfordshire and Middlesex

I am working on a new book on the Butterflies of Hertfordshire and Middlesex (vice counties 20 and 21) to be published by the Hertfordshire Natural History Society. This will update books by Brian Sawford and Colin Plant published in the mid 1980s. Much of the content will cover changes over the past 30 years, but I also want to revisit the historical information that was included in these books to provide context for the later developments and to see if anything has come to light over the past 30 years. **If you have recorded butterflies in these areas and have unsubmitted records for any period I would be pleased to receive them.** I am also interested in recollections or reflections on key sites or species in these two vice counties. I'm interested in any site or species, but I would be particularly interested in comments on Therfield (often known as Royston) Heath, a noted site for collecting *Polyommatus coridon* (Poda, 1761), Chalkhill Blue in the past and whose populations, currently very healthy, have been subject to great fluctuation. and also on *Cupido minimus* (Fuessly, 1775) Small Blue at sites in central and northern Hertfordshire.

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Wanted – records of Pyraloidea (Crambidae & Pyralidae) from Bulgaria in particular and the Balkan Peninsula in general. Bulgaria forms the physical south-eastern gateway to Europe; it may, therefore, provide first evidence of species colonising from the south-east as a consequence of climate change. The Noctuidae (*sensu lato*) and the Tortricidae of Bulgaria are well-known, but most other families are poorly covered. I am in the final stages of reviewing the species of Crambidae and Pyralidae and the main output of this work will be the first ever complete list for the country as well as provisional distribution maps. Anyone who has collected (or photographed) pyraloid moths in Bulgaria is invited to submit their lists to me. I am also willing to consider attempting to name unidentified material (especially Phycitinae) from Bulgaria and/or the countries of the former "Yugoslavia" by prior arrangement.

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AN APPEAL FOR RECORDS

I am currently writing a book about the Butterflies and Moths of Huntingdonshire, vice county 31, which I hope to publish in late 2016 or early 2017. Although Huntingdonshire is a small county it does have three nationally important National Nature Reserves; Holme Fen, Monks Wood and Woodwalton Fen, and before it was drained Whittlesea Mere, which was southern England's largest inland lake. Many lepidopterists have visited these National Nature Reserves and have collected many specimens. I have managed to locate many of the records from these sites by various lepidopterists, but without doubt, there are others I have not located. I would be very grateful if anyone has any records of butterflies and moths from these sites and any other sites in Huntingdonshire if they could contact me at the e-mail address below or by post I will let them know if I have located their lists or if I require a copy of their records.

I am also trying to locate records from a collection made by William Quibell. He was born in Louth, Lincolnshire in 1878 and collected extensively in Lincolnshire and I am informed Yorkshire. He worked as a policeman and on his retirement moved to Brampton, Huntingdonshire where he became landlord of the Black Bull public house in 1924, which he renamed 'Shades of Heather'. He continued collecting in Huntingdonshire and had a room which was full of cabinets. He died in 1959 and his collections were sold at auction on Thursday 23rd February 1961 by the auctioneers Debenham, Storr and Johnson Dymond. I have spent some considerable time trying to locate his collections without success and am beginning to believe that they are now lost or were destroyed. If anyone knows if any of his collection still survives I would be grateful if they could let me know.

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The Entomologist's record is now printed in full colour, enabling us to accept a wider range of illustrative and interpretative material. This development has been made possible by a generous bequest by the late Andy Callow.

Front cover image of *D. aprilina* Marshalls Heath Herts 20 October 2008. © John B. Murray

GOLDEN-ROD PUG *EUPITHECIA VIRGAUREATA* DOUBLEDAY (LEP: GEOMETRIDAE) A TRULY POLYPHAGOUS SPECIES AND RECORDS OF *EUPITHECIA* SPECIES OVERWINTERING TWICE AS PUPAE

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Abstract

The discovery of the larva of Golden-rod Pug *Eupithecia virgaureata* Doubleday (Lep: Geometridae) on Pignut *Conopodium majus* is recorded and illustrated in colour. The literature on the larval foodplants of this species is reviewed. Published accounts of two species of *Eupithecia* overwintering twice as a pupa are cited and a third, *E. pygmaeata*, is added.

Keywords. *Eupithecia virgaureata*, Britain, Larval foodplants.

Literature review

This chronological review excludes any plant which the larvae have accepted in captivity unless there is at least some suggestion that they have been subsequently found on it in the wild.

Crewe (1861) gives an account under the name of *Eupithecia pimpinellata*, but is clearly referring to what we now know as *virgaureata*. He says that he had repeatedly beaten it from the flowers of Golden-rod *Solidago virgaurea* only. In captivity the larva fed freely on *Senecio jacobaea* and *S. palustris*. Doubleday (1861) changes the name *E. pimpinellata* Guen. to *E. virgaureata*.

Crewe (1862) writes about *E. virgaureata* "In Devonshire, Mr. Hellins informs me, this larva prefers the flowers of *Senecio jacobaea*, though there is plenty *of Solidago virgaurea*." In contrast Crewe says that in the Kentish locality he, himself found that it strictly confines itself to the flowers of *Solidago*, though there is plenty of *Senecio* around.

Moore (1862) records breeding the moth from larvae found on *Senecio jacobaea* and one on *Solidago virgaurea*.

Notes from an exhibition which appear in the *Proceedings of the Northern Entomological Society 1862* and published in *Zoologist* **20**: 7901-7904 records "Mr. Greening exhibited a box, in which were a series of *E. virgaureata*, bred from the seed-heads of *Lychnis dioica* and a new species allied to *Eupitchecia absinthiata* but perfectly distinct." *L. dioica* is now known *as Silene dioica*, Red Campion.

Crewe (1863) describes rearing *E. virgaureata* from eggs. He successfully reared them in captivity on the flowers of Cow Parsley *Anthriscus sylvestris*. He then reared them through a second generation on *Senecio jacobaea* and *Solidago virgaurea*.

Gregson (1863) reports that Greening exhibited larvae of *E. virgaureata* which had been fed on the leaves of Sallow and that they had never had a flower of any kind to feed on. This suggests that they had been bred in captivity and not found in the wild.

Wilson (1878) lists the foodplants as "Flowers of Golden-rod, Toadflax, Great Yellow Loose-strife." I presume that by Great Yellow Loose-strife he is referring to

Lysimachia vulgaris as the larva is illustrated on a plant which looks like that species. It is uncertain exactly which species of toadflax he means.

Bohatsch (1893), writing in a German journal, found larvae on *Solidago*, but more commonly on *Heracleum sphondilium* (sic) and *Gentiana*.

Buckler (1895) illustrates the larva and against the plate says "...on flowers of *Senecio jacobaea*, 28th September and 18th October, 1860; on flowers of ling, 8th October, 1861; and on flowers of golden-rod, 2nd October, 1873."

Vivian (1897) describes rearing *E. virgaureata* from larvae on Golden-rod which were collected in October 1896.

Klos (1901) wrote about *virgaureata* in the genus *Tephroclystia*. Near Stainz, Austria he found 30 larvae on a *Crataegus* species which he called *oxyacantha* and *Prunus spinosa* which looked like *virgaureata*. 15 moths emerged between 29 July and 30 August which all looked the same and looked exactly right for *virgaureata*. He remarked that they were smaller and darker than the first generation. He also found larvae on *Solidago virgaurea* and *S. canadensis*. He might have found them on *Senecio* but did not find them on *Gentiana* nor on any of the Umbelliferae.

Tutt (1902) States "Early imagines of *Eupithecia virgaureata* sleeved in April and May on hawthorn, lay eggs freely, the larvae feeding up, pupating and producing a second brood of imagines in August (Vivian)."

Barrett (1904) says of the larva "June, and as a second generation in August, September, and October, on the blossoms of Golden-rod (*Solidago virgaurea*), ragwort, and millefoil; Mr. Buckler says also on flowers of heather." Millefoil must surely refer to Yarrow, *Achillea millefolium*.

Prout (1907) reviews the references quoted above and as a new piece of information says "...if I remember aright, Mr. G. F. Porritt has told me that it also inhabits ragwort on some of our coast sand-hills."

Allen (1912) writes "The larvae are to be beaten from the flowering branches of hawthorn in June and July. The imago occurs again in July and August, and the larva again in the autumn on *Senecio jacobaea*, *S. palustris*, *Angelica sylvestris, Solidago virgaurea*, and probably other plants." He comments that that list of foodplants is certainly incomplete as the progeny of the Golden-rod feeding larvae must find some other food than hawthorn, as there is very little growing where they occur. He also says that where larvae on hawthorn are often abundant neither ragwort, Golden-rod nor *Angelica* occur in any quantity. It is curious that he gives *S. palustris* which is Marsh Fleawort. Preston, Pearman & Dines (2001) have it as *Tephroseris palustris* and state that it became extinct in Britain, the last native record being in 1899. There must be doubt as to whether he really meant that plant. Allen also makes an interesting observation on voltinism. He says that of larvae taken in June and July (i.e., first brood), some produce moths as a second brood in July and August of the same summer, but some appear with the first brood the following summer. He even bred one in April 1909 from a pupa from June or July 1907. The second brood is, therefore, partial and the pupal state can pass through two winters.

Stokoe & Stovin (1948) give the foodplants as Golden-rod and ragwort.

Plate 1. Larva of *Eupithecia virgaureata* on fruits of *Conopodium majus*, Fingle Bridge near Drewsteignton, South Devon, June 2009.

South (1961) gives golden-rod and ragwort as foodplants, but says that the caterpillars that hatch from the egg in May feed on the flowers of Beaked Parsley *Anthriscus sylvestris*. This is the plant now more commonly known as Cow Parsley. I cannot be certain whether this account was from an observation in the wild or whether this was from Crewe's account of captive breeding.

An Identification Guide to the British Pugs by members of the British Entomological and Natural History Society (1981) gives ragwort and golden-rod.

Skou (1986) in his book covering North Europe states that the foodplants given in the literature are Goldenrod, ragwort, Heather *Calluna vulgaris* and Common Groundsel *Senecio vulgaris*. I cannot trace common groundsel as a foodplant in British literature.

Emmet (1991) states that the foodplant of the first generation is unknown and the second generation is on flowers of *Solidago* and *Senecio jacobaea*.

Henwood (1996) describes finding a wild first brood larva on Grey Willow *Salix cinerea* leaves in Devon.

Porter (1997) gives golden-rod and ragwort but says that the natural foodplant of the first-brood larva has yet to be proven.

Riley & Prior (2003) give golden-rod and ragwort for the second brood. They state that the first brood feeds on hawthorn. Adrian Riley (pers. comm.) tells me that Gaston Prior found larvae on hawthorn in Oxfordshire in the 1980s.

Mironov (2003), in the European literature, says that the first generation is oligophagous and is found on the leaves of *Crataegus monogyna, Prunus padus, P. spinosa and Rubus chamaemorus*. For the second generation he says that it is polyphagous and gives the flowers and seeds of *Solidago virgaurea, S. Canadensis, S.gigantea, S. japonica, Senecio jacobaea, S. nemorensis, S. vulgaris, Centaurea, Cirsium palustre, Artemisia vulgaris, Hieracium, Eupatorium cannabinum, Taraxacum officinale, Inula conyza, Calluna vulgaris, Erica tetralix, Lysimachia, Heracleum sphondylium, Anthriscus sylvestris, Chaerophyllum, Pimpinella saxifraga, Angelica sylvestris* and *Gentiana*. He also gives the flowers and ripening seeds of *Heracleum moellendorffi* in the far east of Russia and flowers of *Kalimeris yomena* and *Dendrathema japonicum* in Japan.

Skinner (2009) gives Golden-rod, ragwort and refers to my record on Grey Willow *Salix cinerea* as the only record of a first brood larva in the wild.

Waring & Townsend (2009) give golden-rod, ragwort and say that the foodplants of the first generation are unresolved, but mention the larva I found on Grey Willow.

Clancy, Top-Jensen & Fibiger (2012) give the first brood larvae as having been found on Pignut *Conopodium majus* and Grey Sallow (i.e., Grey Willow). They give second brood larvae as feeding on Golden-rod, ragwort and possibly Heather. The Pignut will have come from my exhibit at the British Entomological and Natural History Society exhibition in 2009. Details of my discovery of a larva on Pignut are given below.

Recent records from heather and pignut

In September 2007 I collected a geometrid larva by sweeping over heather on heathland in South Devon. There was a mix of Bell Heather *Erica cinerea* and Ling *Calluna vulgaris* present, but it is impossible to know for certain which it was eating in the wild. In captivity the larva was fed on the flowers of *C. vulgaris*. A male *Eupithecia virgaureata* emerged on 5 June 2008. The following year, on 19 June 2009 I found a pug larva feeding amongst the flowers and fruits of Pignut *Conopodium majus* at Fingle Bridge near Drewsteignton, South Devon (Plate 1). It had prominent, white, diagonal lateral streaks, which in my experience, although not completely characteristic of *E. virgaureata* are certainly suggestive. My hunch was proved correct when a male *E. virgaureata* emerged on 3 August 2009.

Other *Eupithecia* pupae overwintering twice

As stated above Allen's (1912) observations show that *E. virgaureata* is partially rather than completely double-brooded and that a pupa overwintered twice. I have reared two other *Eupithecia* species after two winters as a pupa. The first is *E. abietaria* (Henwood and Sterling, 2013); the Second is *E. pygmaeata,* of which I reared a moth on 25 May 2014 from a larva collected in The Burren, County Clare, Ireland on 10 June 2012.

Summary of foodplants in the British Isles

E. virgaureata is clearly a polyphagous species. The authors of some modern textbooks have overlooked some historical references. The foodplants recorded in the British literature are: Golden-rod, ragwort, Angelica, heather, Yarrow, Great Yellow Loosestrife, toadflax, Red Campion, hawthorn, Grey Willow, Cow Parsley and Pignut. Of these, hawthorn, Grey Willow, Cow Parsley and Pignut are mentioned as being foodplants for the first brood larva. I suspect that the first brood larva is not as oligophagous as Mironov (2003) suggests in view of the range of different plants involved. It must be noted, however, that those foodplants given by Wilson (1878) and South (1961) are simply stated without any details of the source of the information. I cannot be certain that South was not simply quoting Crewe's captive rearing of larvae on Cow Parsley. Allen's record of Marsh Fleawort remains a mystery.

I encourage entomologists to rear pug larvae which have prominent, whitish, diagonal lateral streaks that they find on other plants. I must emphasise that alone this character is not diagnostic but suggestive, so adults must be reared. For example, I found a candidate larva on Fleabane *Pulicaria dysenterica* in 2011, but when the moth emerged it was Wormwood Pug *E. absinthiata*. I suspect that the vernacular name Golden-rod Pug and indeed its scientific name *virgaureata* has hampered research into its life history.

Acknowledgements

I am very grateful to Mr R.J. Heckford for his help in finding various references and to Dr C. Winkelvoss and Dr A. Ronneberger for their help in translating the German papers.

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Eilema caniola (Hb) (Lep.: Erebidae), Hoary Footman new to Bedfordshire

A likely candidate for this species was trapped on 16 July 2014 in a Luton garden by Andy Grimsey. It was collected by Andy Banthorpe, one of the joint County Macro-moth Recorders, who later confirmed its identity by dissection (a male). As far as I am aware there are no previous records of *Eilema caniola* in the county and as such is a new addition to the Bedfordshire (VC 30) list.

A second probable *E. caniola* was trapped the following day at the same location. This moth was seen a few days later by Andy and myself and it was agreed that it looked very much like an *Eilema caniola*. However, it was not dissected and its identity remains unconfirmed.

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Observations on the larva of *Incurvaria pectinea* Haworth (Lep.: Incurvariidae)

The larval habits of *Incurvaria pectinea* Haworth (Lep.: Incurvariidae) were described in the British literature at least as long ago as 1854 (Stainton, H. T. 1854. *Insecta Britannica*: 40-41) as follows:

'The larvae feed in cases on fallen leaves during the autumn and winter; when young they mine (according to Zeller) the leaves of the birch, in May and June, then descend by threads to the ground among the fallen leaves.'

Later, Stainton (1873. *The natural History of the Tineina* **13**: 74-76) provides similar observations, namely that after mining the leaves (he now gives both birch *Betula* sp. and Hazel *Corylus avellana*) the larva cuts out an oval case in which it descends to the ground where it feeds principally on fallen leaves.

Heath & Pelham-Clinton *in* Heath (1976. *The Moths and Butterflies of Great Britain and Ireland* **1**: 280) give the same information, adding that when on the ground the larvae enlarge their cases on one side at a time by cutting larger oblong pieces from dead leaves and eating the old case. They also state that, when on the ground, the larvae sometimes also eat green leaves of various herbaceous plants.

It is clear, however, from our observations in 2014 that the larvae do not always feed on the ground. On 22 July we visited Meall Mor at the western end of Glen Coe, Argyll (VC 98). There we found 11 cases of *Incurvaria pectinea* on the upper surfaces of leaves of bushes of *Betula* sp. that were about 50 cm high growing in a damp area. One of the cases appeared to be made from a leaf of Meadowsweet *Filipendula*

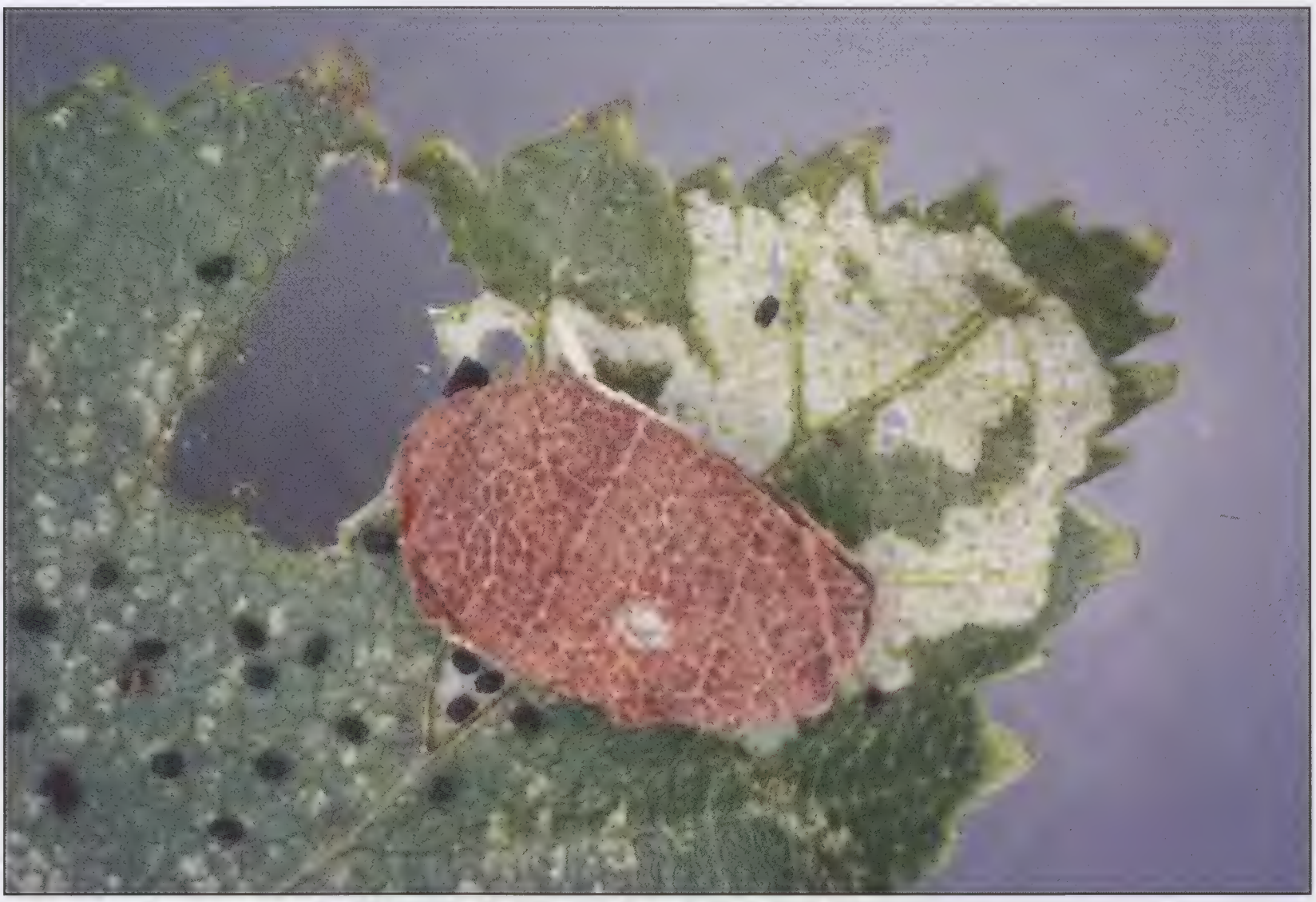

Plate 1. *Incurvaria pectinea* case with evidence of grazing on a leaf of *Betula* sp.

ulmaria, which was fairly common in the area, because it was much paler than the other cases (which otherwise seemed to be constructed from dead leaves of *Betula* sp.) and had a number of longitudinal creases. The larvae were in their penultimate and final instars. They were either grazing the upper surface of the green leaves or eating parts of the leaves. The grazing of green leaves continued in captivity (Plate 1). Although the leaves on the bushes had evidence of the typical, almost circular, small holes made by the larvae when they cut out their initial cases, there was no evidence that these later cases had been made from such leaves. This suggests that after the larvae had made their initial cases they descended to the ground in the usual way, made their later cases from leaves on the ground but then returned to the bushes to feed. Perhaps the reason is that the ground and accompanying leaf litter there is too damp for them.

This might be the first time that larvae have been observed, or at least recorded, to feed in their later stages on green leaves of their host-plant in the wild. There is, however, a published record of larvae eating green leaves in captivity. Although *Betula* sp. and *Corylus avellana* are the most widespread known host-plants in the British Isles, on 4 June 2006 Edmunds (2007. *Entomologist's Rec. J. Var.* **119**: 228-229) found larvae mining leaves of Small-leaved Lime *Tilia cordata* in Hampshire from which one moth resulted the following year. Edmunds records that he sent four cases to Ben Smart whose rearing technique was to keep the material in a secured plastic bag with fresh *Tilia* sp. leaves that he replenished every five to seven days 'leaving the old ones in until the larvae voluntarily switched to the newer leaves.'

Edmunds states that this was the first record of this foodplant for *Incurvaria pectinea* in the UK and possibly Europe. There is another potential record, unpublished until now, made by RJH on 4 September 2004 of the larva feeding on a different *Tilia* species at Hardwick Wood, Plympton, Plymouth, Devon. Several leaves of Lime *Tilia x europaea* were found with 'cut-outs' made by larvae that had excised their initial cases, one leaf having at least 36 such excisions. Unfortunately, and despite the large number of excisions, RJH did not find any cases on the ground and so could not rear the species. The tentative identification was that they had been made by *Incurvaria pectinea* and Edmunds' note gave support to that view. We must now try to find larvae there for confirmation of the identity of the species mining leaves of *Tilia x europaea*.

We thank Mr D. Watson of the National Trust for Scotland for permission to record at Meall Mor.

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A NEW *PHTHEOCHROA* STEPHENS, 1829 (LEP.: TORTRICIDAE: COCHYLINI) FROM CYPRUS

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Abstract

Phtheochroa cypriana Barton sp. n., (Tortricidae, Cochylini) is described on the basis of four male specimens collected from Nikokleia, Paphos District, Cyprus, over three spring trips, 2012-14.

Key words: Lepidoptera, *Cochylini*, *Phtheochroa cypriana*, new species, Cyprus.

Introduction

Worldwide there are 111 species of *Phtheochroa* (Gilligan *et al*, 2014) and for Europe (including Cyprus) there are 36 species given by Karsholt & Nieukerken (2013). Three spring trips to Nikokleia, Paphos District, Cyprus, a site in the lower reaches of the Diarizos Valley, have produced several interesting species of Tortricidae, including four males of an unknown *Phtheochroa* species.

Phtheochroa decipiens Walsingham, 1900 and *Phtheochroa dodrantaria* (Razowski, 1970) are the only *Phtheochroa* given for Cyprus at *www.faunaeur.org*. *P. decipiens* is known from Cyprus and Eastern Russia, with the range extending east to Syria (Aleppo, Shar Devesy (locus typicus)), Asia Minor, Caucasus, Transcaucasus, Iran, Kazakhstan and Central Asia (Razowski, 2009). However, it has different habitus, male genitalia and flight period (Razowski, 1970) from the new species, so was discounted.

P. dodrantaria is known from Cyprus and Lebanon: Beirut (locus typicus) (Razowski, 1970). In habitus it appears quite similar to the new species, but the male genitalia (Razowski, 1970) are quite different. Its biology is unknown.

Some similarities between the first specimen of the new species and the representations of *Phtheochroa reisseri* (Razowski, 1970) were noted. Prof. Józef Razowski was contacted and kindly informed the author that the Cyprus specimen might be a distinct close species, due to the longer uncus and somewhat broader transtilla being different from *P. reisseri*, but given the variation shown within species of this family, he suggested more specimens, especially the female, might help. *P. reisseri* is known from Greece, France (Razowski, 2002), Croatia (Šumpich & Skyva, 2012) and Bulgaria (Zlatkov, 2010).

The author contacted Marko Mutanen, who kindly accepted material from one of the Cyprus specimens for DNA analysis. The results showed that, within the BOLD system, it was most closely related to, but over 3% different from, *P. reisseri*.

The author made a web search and contacted lepidopterists who had their names against specimens of *P. reisseri*. Jan Šumpich kindly replied saying that although he only had one male from Croatia, its genitalia were identical to that of a French specimen photographed by Peter Huemer and the specimen in Razowski, 1970 from

Crete. Boyan Zlatkov was sent photos of the Cyprus *Phtheochroa* sp. and he replied that he had male *P. reisseri* specimens from Bulgaria: Kozhuh near Petrich, 200m, N41°27'42.6": E23°15'29.9", 1.v.2008 in his collection and they matched the Razowski drawings very well. He also very kindly shared photos of a male specimen and genitalia slide of *P. reisseri*.

From all this information it could be seen that the differences between the Cyprus *Phtheochroa* sp. specimens and *P. reisseri* male genitalia were stable and the overall consensus was that these represented a new species.

Phtheochroa cypriana sp. n.

Type material

Holotype ♂ IB236, **Cyprus**: Paphos District: Nikokleia, N34°73'21.2" E32°58'47.4", 8.iv.2013, slide IBCY116 (IB leg. et coll.) (Plates 1 & 2).

Paratypes: 3 ♂♂: Nikokleia: specimen and slide IBCY15, 19.iv.2012; specimen IB139, 06.iv.2013, slide IBCY104 and specimen IB1542, 24.iii.2014, IBCY783 (all IB leg. et coll.). All four specimens came to light.

Description

Description follows Razowski (1970, 2002 & 2009).

Imago: ♂. (Plate 1). Wingspan 14.5-15.5mm, forewing length 6.5-7.5mm. Antennae: simple, ciliate, ringed alternately light brown and white. Labial palps: admixed white and brown scales, the latter predominating on the outer side of the second segment. Head: clothed in white scales. Thorax: predominantly white with small patches of black scales basally on the tegulae, and rust distally on either side of the dorsum. Abdomen: yellowish white scales throughout, white anal tufts on male. Forewings: ground white, tinted yellow to greater or lesser degree between wing base and median fascia; basal fascia narrow with blackish scales; sub-basal fascia, at 1/6, on the costal edge, of similar colour, with sparse scattered black scales inwards from this; median fascia divided into costal spot and dorsal blotch and consists of grey tipped scales from dorsum to about halfway across wing, with two black, squarish spots mid wing with rust and grey scales proximally and distally to these; costal spot rectangular, with black and grey scales; postmedian interfascia very large, marbled with grey scales; postmedian fascia reduced to a large triangular greyish brown subtornal spot, extending to mid wing, blackish at its apex; distal to this a grey brown subterminal fascia running from post tornus to 5/6 on costal edge; apical fascia blackish with rust spot from middle to costal edge; cilia banded black, rust, black from tornus to apex, with inner black scales at apex presenting a distinct crescent distal to the rust spot in the apical fascia. Costal fold 1/5 of wing length. Hindwings: whitish ground with well-spaced grey-brown strigulations almost perpendicular to the costal edge; gradually changing to close speckling towards termen causing wing colour to darken. Cilia whitish, with grey line at about 1/4, strongest between tornus and apex.

Plate 1. *Phtheochroa cypriana* sp. n., Nikokleia, Cyprus, 8.iv.2013, ♂ holotype, specimen IB236.

Male genitalia (Plate 2).

Uncus long, strong and bifurcate at apex. Socii broad, round ended. Tegumen well developed, narrow shouldered. Transtilla broad, strongly stepped on inner edges; median process broadly triangular with two rounded apices supporting terminal thorns of varying number, size and shape. Juxta: large, shield shaped, top concave, bottom rounded; side lobes, forming central concavity, variable in size; small upwards point in central concavity; small, sharp process on outer edge, below side lobes. Valvae long, narrowing slightly at about 1/3 due to slightly concave costal and saccular edges; cucullus barely developed. Sacculus short, more or less evenly broad, ending in a short extension with a more or less sharp point. The proportion (sacculus tip to vinculum):(valva tip to vinculum) is greater than 3:1. Vinculum fairly narrow, rounded. Aedeagus short, curved and widening gradually from coecum penis, culminating at the apex in a strongly curved ventral spine; vesica has two strong thorn-like cornuti, one of which is curved at the base, and a fairly large sub-triangular to ovoid, sclerotised plate.

Female: Unknown.

Biology: food plant/ early stages unknown. Flight period is early spring with known range 24.iii – 19.iv.

Differential diagnosis

Phtheochroa cypriana sp. n. differs from *P. reisseri* in habitus, i.e. rust scales on the forewing mainly confined to the apical spot and not extending across the termen as in *P. reisseri*; in the male genitalia by: longer and narrower valvae; the short, more or less straight sided sacculus, and shorter, less sharp saccular projection; the proportion (sacculus tip to vinculum):(valva tip to vinculum) is greater than 3:1 whereas in *P. reisseri* it is less than 2:1; the large juxta; and the aedeagus which widens gradually

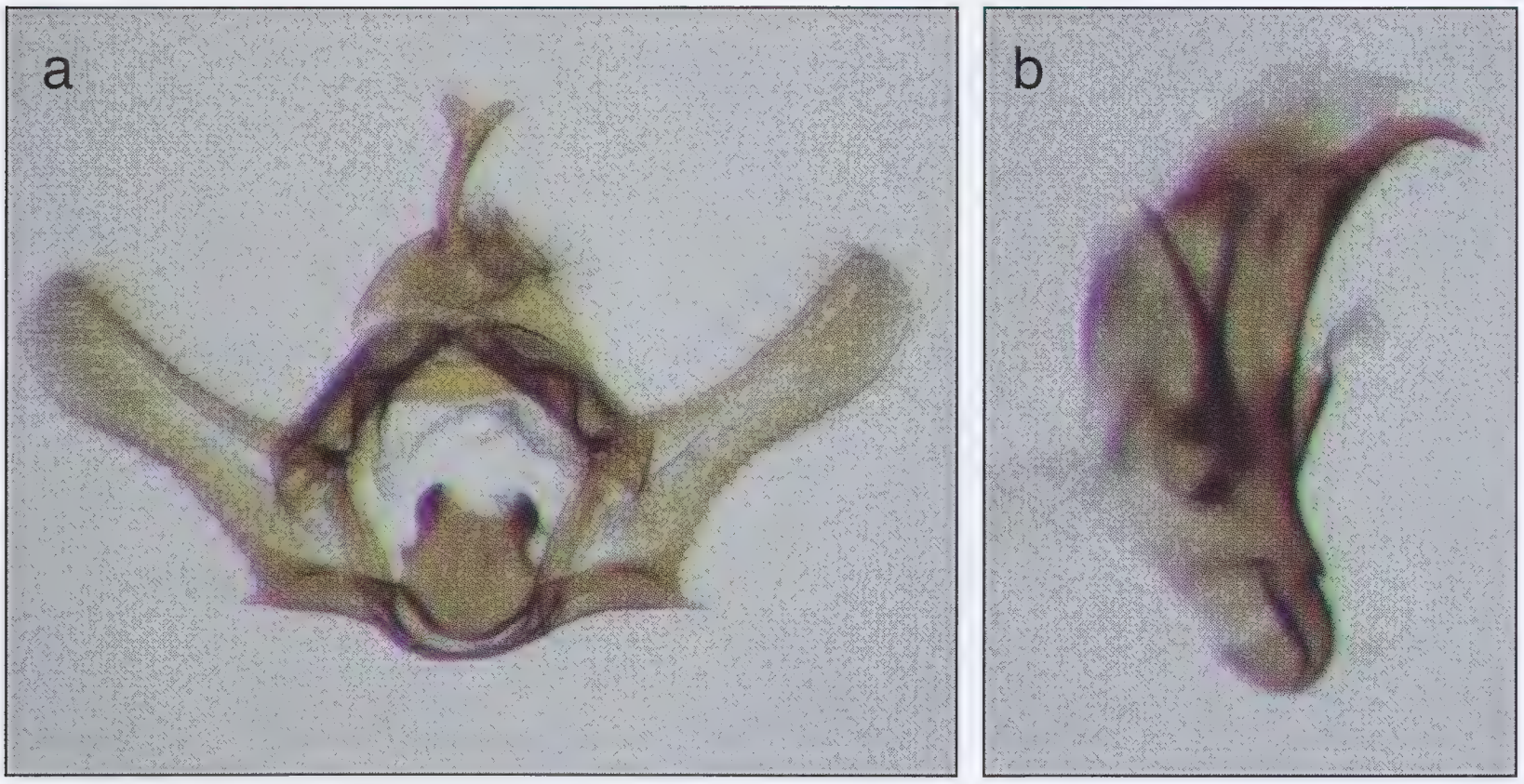

Plate 2. *Phtheochroa cypriana* sp. n., genitalia of holotype male, specimen IB236, slide IBCY116. a. genital capsule; b. aedeagus.

from the coecum penis to apex, has a strongly bent apical spine and one cornutus being curved at the base where in *P. reisseri* it is as wide at the coecum penis as it is at the apex, has a straight apical spine and cornuti; the flight period is late March to mid-April in *P. cypriana* sp. n. compared with May in *P. reisseri* (Razowski, 2002 and B. Zlatkov, 2010).

In habitus *P. dodrantaria*, given for Cyprus, appears to be similar. Though no material was available for comparison, the male genitalia of *P. dodrantaria* differ from *P. cypriana* sp. n. in the following ways: the uncus is undivided at the apex; the shape of juxta; the extent of the saccular process; and a single straight cornutus.

Geographical distribution

At present known from Nikokleia, Paphos District, Cyprus only.

Etymology

The moth is named after the island of Cyprus, where it is found.

Location of type material

The holotype and three paratypes are at present in the author's collection but the holotype will be given to a national museum at some point in the future and at least one paratype will ultimately go to the Department of Agriculture Insect Collection, in Nicosia, Cyprus.

Acknowledgements

The author would like to thank the following Cypriots for the help they have given during the finding and naming of this species: the Minister of the Department of Environment for granting the licences to collect moths; Elena Erotokritou from the

Department of Environment for organising the above licensing process; Erodotos Kakouris, entomologist, Cypriot Department of Forests for helping with contacts; Mrs Despina Philipou of the Cypriot Department of Agriculture for checking the Department's Insect Collection for specimens; and finally the Konstantinou family for allowing moth trapping at both sets of accommodation where the moth has been found.

The following experts are owed thanks (alphabetically): Peter Huemer (Austria), Ole Karsholt (Copenhagen); Knud Larsen (Sweden), Marko Mutanen (Finland); Józef Razowski (Poland); Jan Šumpich (Czech Republic); Kevin Tuck (UK) and Boyan Zlatkov (Bulgaria). I need to thank Boyan Zlatkov again for his helpful comments on drafts of this paper. Lastly no small thanks are due to my friend, and wife, Kathleen Rosewarne for her help, organisation, support and good companionship during our trips and for many hours of anaesthetising moths during her hard-earned holidays.

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Recent records of the Festoon *Apoda limacodes* (Hufnagel) (Lep.: Limacodidae) on Salisbury Plain, Wiltshire

In the context of this note, 'Salisbury Plain' refers to the extensive military training areas extending from Warminster in the west to the boundary with Hampshire in the east.

On 25 July 2014 I operated four MV lights west of Tilshead at Crossing J on Breach Hill (O.S. grid reference SU 0146). One light was suspended over a sheet and the three others ere associated with traps which I visited at fairly regular intervals to examine their contents. Of the 59 species recorded the most noteworthy were four Festoons *Apoda limacodes*.

The habitat consists of open scrub, mostly Common Hawthorn *Crataegus monogyna*, but also a wide variety of shrubs typical of chalk downland. Nearby are plantations, which are probably less than 30 years of age, consisting of Beech *Fagus*

sylvatica, Sycamore *Acer pseudoplatanus* and a few unidentified coniferous species. Approximately 1km to the south-east is a small plantation in which there are three oaks *quercus spp* which would appear to be over 50 years of age. Thus the two known pabula of the Festoon are present, but not in the immediate vicinity of the trapping area. The general habitat is certainly not typical of that in which, during the normal course of events, one would expect to encounter the Festoon.

For several years I have maintained, as near as possible, a definitive list of the Lepidoptera recorded on the Army training area of Salisbury Plain compiled from data supplied mostly by resident and occasionally visiting recorders and the Ministry of Defence (MoD) at Tilshead. The first record of Festoon of which I am aware was at Silk Hill (SU 1846) on 3 July 1999; the next occurrence was at Hare Folly (SU 1949) on 19 June 2000. There is a record in a garden at Berwick St James (SU 0739) on 10 July 2013 and although not on the Plain, this is apparently also both outside the previously known distribution of the Festoon in Wiltshire and in atypical habitat. These moths could well be regarded as wanderers, but my record of four at a single site may suggest that this may not be the case. The MoD ranges extend to an area about the size of the Isle of Wight and the majority of records of Lepidoptera on this area are overwhelmingly of butterflies; nocturnal and daytime fieldwork directed towards moths is only undertaken on a regular basis by less than a handful of recorders, so that understanding of the majority of moth species on this area is at best patchy. Over the years many visiting lepidopterists have visited sites across the Plain, chiefly around Tilshead, but it would appear that there has always been some resistance to the temptation of forwarding their records to the willing resident recipients – an unfortunate loss of data.

In the context of the above records of Festoon, my thoughts are taken back to 1987 when the Scarlet Tiger *Callimorpha dominula* (L.) was first recorded on the Salisbury Plain, having prior to that date hardly ever been recorded in Wiltshire away from the river systems. After that initial record, the species was recorded somewhat intermittently but then with increasing frequency to the present state of occurring anywhere and in any habitat not only on the Plain but in Wiltshire in general. For example, there are larval records from the carrots 'Autumn King' in my garden, Common Gromwell *Lithospermum officinale* at North Wraxall (ST 8274) and the uppermost branches of large Blackthorn *Prunus spinosa* bushes at Shrewton Folly (SU 0948) on Salisbury Plain; a similar situation now repeated in many other counties in the south. One could trawl through various entomological journals which have been published in the last few years and find notes and reports of Scarlet Tiger detailing new larval foodplants, extension of known range and so on. What I have not seen is any comment as to what might be the motive force, if one can use that phrase, for such a change to occur. One could refer to climate change, but what utilising a new larval foodplant has to do with climate is a puzzle to me. The above records of Festoon may of course be purely circumstantial, but in the interest of establishing if there could be a change in the ecology of this moth following a similar pattern to that of the Scarlet Tiger as noted above it would be interesting and possibly advantageous to know if

other recorders are noting Festoons in habitats or localities which they do not normally associate with this species.

The department responsible for the sustainable management of natural and built assets across the MoD estate is part of the Defence Infrastructure Organisation (DIO) and is located at Westdown Camp, Tilshead. I am particularly grateful to Julie Swain and Iain Perkins for generously giving me access to their datasets and to Tilly Gregory, secretary of the Imber Ranges Conservation Group, for dealing with considerable efficiency the various requests I present in regard of records.

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Meganola abula ([D. & S.]) (Lep.: Nolidae), Kent Black Arches new to Bedfordshire (VC30)

A single *Meganola abula* was trapped in Biggleswade on 17 July 2014 by Lionel Burgess. The County Macro-moth Recorders got to see it the following day and confirm the record. As far as I am aware there are no previous records of *Meganola abula* in the county and as such is a new addition to the VC30 list.

It is surprising that none made it to Bedfordshire in 2013, when there was a lot of migration in the autumn.

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APPEAL FOR CONTRIBUTIONS

Readers will be aware of an increasing number of contributions concerned with the Lepidoptera of areas outside Britain. We are delighted that foreign authors consider us worthy and will, of course, continue to accept papers that are of some relevance or interest to British lepidopterists. We do strive, at the same time, to ensure that our pages are dominated by contributions about the British Isles Lepidoptera, but the reality is that we receive rather little.

We therefore positively invite contributions on British moths and because we are now publishing material as fast as it comes in we can usually offer very rapid publication (though this is always subject to the size of the article actually fitting the available space). Please refer to the very brief guidelines inside the front cover or, if you prefer, contact the Editor direct for an informal chat.

We positively encourage the inclusion of colour photographs provided that they serve to illustrate some point. In particular, we welcome images of early stages, macro and microhabitat features and other items in addition to moth portraits. If you are including graphs, charts etc please consider using colour to increase clarity.

COLIN W. PLANT

Editor (*cpauk1@ntlworld.com*)

ON *PAMMENE CRATAEGOPHILA* AMSEL, 1935 (TORTRICIDAE) FROM CYPRUS, WITH A DESCRIPTION OF THE FEMALE GENITALIA

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Abstract

Some information on *Pammene crataegophila* Amsel, 1935 (Tortricidae), collected from Cyprus, is presented, including a description of the previously unknown female genitalia.
Keywords: *Pammene crataegophila*, Tortricidae, Cyprus, genitalia.

Introduction

Pammene crataegophila Amsel, 1935 is known from Turkey and Cyprus (Karsholt & van Nieukerken, 2011) and Russia (Danilevsky & Kuznetsov, 1968). Five specimens of this species were collected from Nikokleia, Paphos District, Cyprus, during three trips in 2013-2014: one fresh specimen in March, and four worn specimens in late September – early October, from what are probably two different generations.

No match could be found for these specimens in Razowski (2003) but, in communications with Knud Larsen, the possibility that they might be *Pammene crataegophila* was raised, but not confirmed. No literature or further information on *P. crataegophila* could be found. The moths did not match the *Pammene fasciana* (L.) featured in Razowski (2003) – the only other *Pammene* given for Cyprus in Fauna Europaea. All this information led the author to presume the specimens were *P. crataegophila* and this was later confirmed by Boyan Zlatkov from the male genitalia, which matched the drawing for *Pammene crataegophila* in Danilevsky & Kuznetzov (1968). BZ also informed the author that the female appeared to be undescribed and suggested it would be good to publish details of both (Plates 1 & 2).

Method

Moths were obtained by netting around *Crataegus azarolus* bushes and by light trapping with a commercial 40W mains Heath trap. Moths were anaesthetised using 100% acetone (locally-bought nail polish remover), pinned and set in plastazote-lined boxes, then placed in a freezer overnight. Genitalia preparations were carried out by the author in the standard way (Robinson, 1976), with the male genitalia spread, and mounted in Euparal.

Material examined

All Nikokleia, Cyprus: 30.ix.2013, spec. IB1193, ♂ gen. prep. IBCY400; 1.x.2013, spec. IB1229, ♀ gen. prep. IBCY399; 27.iii.2014, ♂ spec. IB1560, gen. prep. IBCY569; 1.x.2014: spec. IB2089, ♂ and spec. IB2090, ♀ gen. prep. IBCY801. The only spring specimen (IB1560) was netted around a small group of *Crataegus azarolus* trees on 27.iii.2014, where it was one of many similar moths present. Unfortunately, the weather was windy, and cloud cover had been increasing. After potting this

specimen, the sun clouded over, and more specimens could not be found. The weather was poor for the rest of the trip and no further material was obtained.

Description of adult female

Wing description follows Baixeras (2002) and Razowski (2003). For description of male see Danilevsky & Kuznetzov (1968).

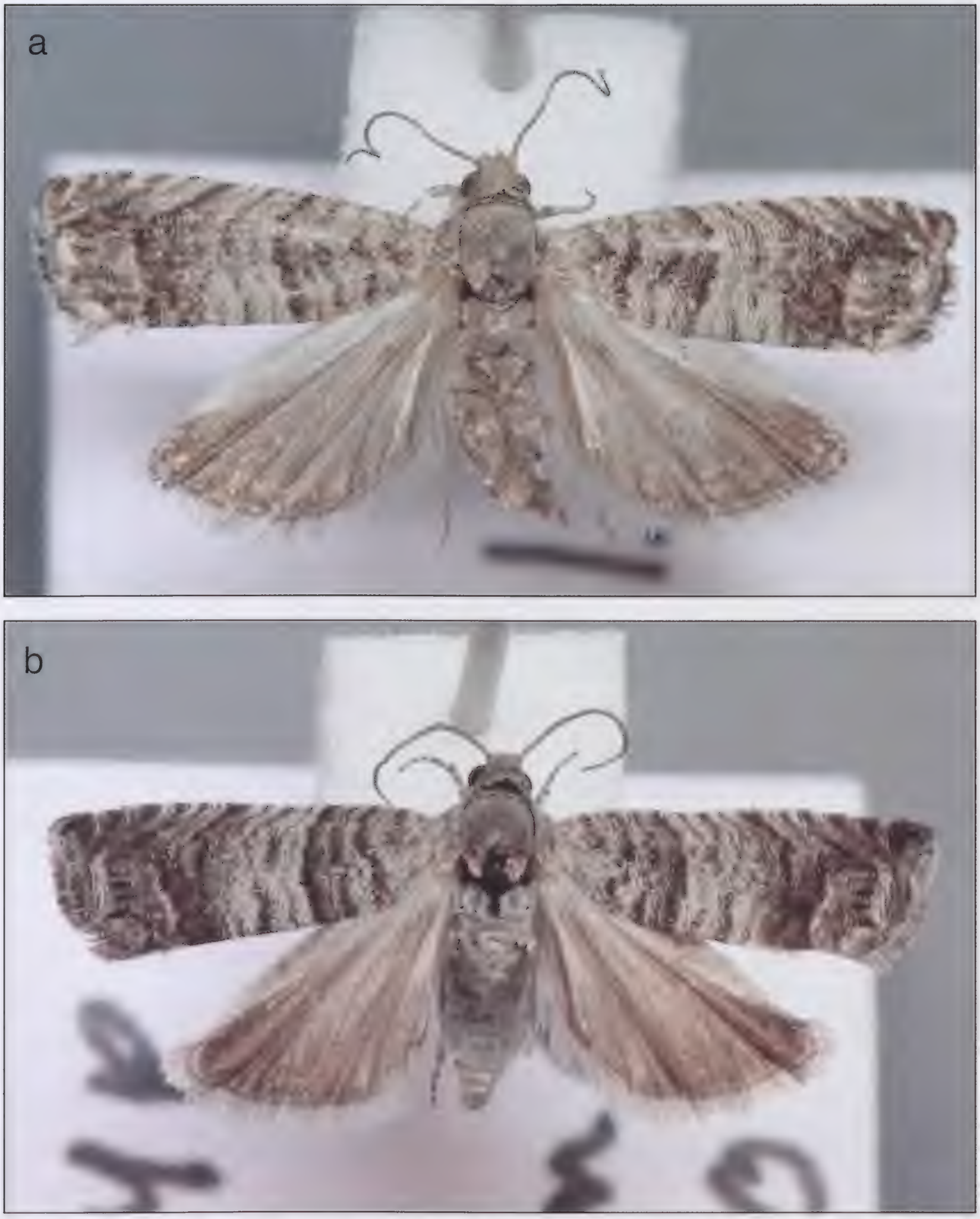

Plate 1. Adult *Pammene crataegophila* Amsel. Nikokleia, Cyprus. a. female, 1.x.2014; b. male, 27.iii.2014.

Forewing length: Spring: No ♀♀ available (1♂ 5.5 mm); late summer/early autumn generation: two ♀♀ both 5.5 mm (compared with two ♂♂, both 5.0 mm).

Female as male with light grey-brown head; antennae filiform, light grey-brown ringed whitish. Labial palps up-turned, heavily scaled and bushy, especially second segment with scales almost obscuring segment three in some specimens; outer sides light grey-brown with darker scales forming a small, variably shaped central patch and a more or less complete terminal band on segment two; inner side white; segment three, more or less obscured by segment two, has a variable mix of dark and pale scales. Thorax light grey-brown, scales having narrow pale tips; tegulae pale grey-brown with broad pale tips; distally both thorax and tegulae paler due to increased size of pale tip. Forewing: ground light fuscous-brown with dark brown, plumbeous and whitish markings. Basal fascia small, admixed brown and pale fuscous-brown; subbasal fascia at 1/4, dark brown, gently curving convex distally from costa to dorsum; median fascia at 1/2, dark brown, distally angled from costa to 1/4 way across wing, then sharply angled to reach dorsum more or less perpendicular to it, merging at about halfway across wing with an area of dark brown scales forming a blotch up to the proximal white edge of the ocellus; post-median fascia at 2/3, dark brown, distally angled from costa towards distal edge of ocellus; preterminal fascia short, broad at costa, tapering rapidly and curving towards termen; costa has five pairs of strigulae (5-9) between apex and median fascia. Ocellus scales dark brown with fine white tips, bordered proximally (complete) and distally (broken) with whitish scales, contains 4-5 dark brown elongate spots; fringe grey-brown. Hindwing dark brown near termen, increasingly paler proximally; fringe white-tipped grey-brown scales. Genitalia (Plate 2): genital plate roundly triangular at base with acutely tapering extensions forming more or less parallel sided U-shaped indentation down to proximal end of lamella postvaginalis. The medial area is about 3/4 of the width of genital plate, heavily pitted with tormae and partly demarcated by inward pointing fold lines from lower edge angled towards ostium. Lamella postvaginalis is about three times longer than wide, more or less parallel sided after proximal narrowing and is weakly sclerotised; colliculum weakly sclerotised, about twice as long as wide, narrowing at 1/3 distally. Cingulum cylindrical, well sclerotised, slightly longer than wide, gently tapering distally. Ductus bursae fairly short. Ductus seminalis broad proximally, emerging from corpus bursae adjacent to the ductus bursae. Corpus bursae large, oval to pear shaped, containing two well developed signa, each having a more or less circular sclerotised base and centrally produced, curved and sharply pointed spine.

Acknowledgements

Thanks are due to the following tortricid experts: Knud Larsen (Denmark) and Boyan Zlatkov (Bulgaria) for their help with identification; Boyan Zlatkov and Joaquin Baixeras (Spain) for their help with the genitalia and wing pattern; and Boyan Zlatkov for helpful suggestions on the draft text.

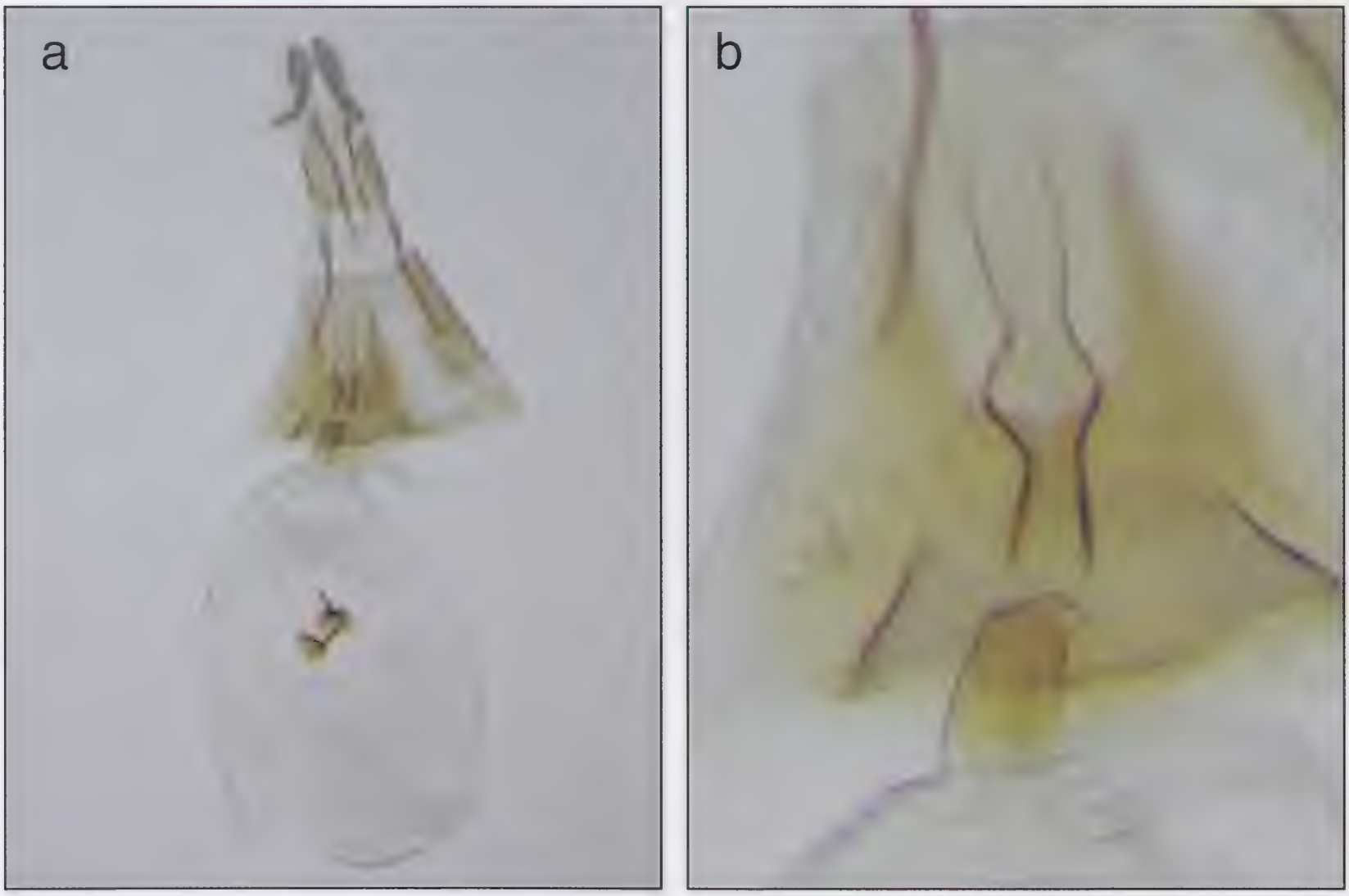

Plate 2. *Pammene crataegophila* Amsel. Nikokleia, Cyprus. a. 1.x.2014, ♀ genitalia; b. same specimen showing detail of the cingulum and ductus bursae; c. ♂ 27.iii.2014, genital capsule; d. 30.ix.2013, detail of aedeagus and cornuti of different male.

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Larvae of four species of footman moths (Lep.: Erebidae, Arctiinae) found on unusual foodplants

When the footman moths were classified in the sub-family Lithosiinae of the Arctiidae, de Worms (1979. In Heath & Emmet (Eds.), *The Moths and Butterflies of Great Britain and Ireland* **9**. Curwen Press) stated that the larvae eat lichens, although in captivity some species will eat leaves of vascular plants.

On 8 April 1999 we were at Garn Dolbenmaen, Caernarvonshire (VC 49) when BPH found a larva of Four-dotted Footman *Cybosia mesomella* (L.) resting on the upper surface of a bramble *Rubus fruticosus* leaf. It was not feeding, but in a resting phase waiting for ecdysis. It is worth noting that larvae of this species shed their skins surprisingly often; they are known to have an astonishing 12 instars (Henwood, 1997. *Entomologist's Gazette* **48**: 257-258). The larva underwent ecdysis the following day and in captivity proceeded to eat bramble leaves. It was reared through to the adult and fed only on bramble in captivity. We obviously cannot say for certain that the larva had eaten or would have eaten bramble if we had left it in the wild, but it does seem likely that it would have done so. Porter (1997, *The Colour identification Guide to Caterpillars of the British Isles*) states that the foodplants are various lichens and algae growing on heather, sallow and other plants. He goes on to say "also accepting the leaves of sallow, bramble, dandelion and heather after hibernation." We presume that by saying accepting he means that this was in captivity.

On 4 June 2013 we were at Newborough Warren, Anglesey (VC 52) when PHS found a larva of Common Footman *Eilema lurideola* (Zincken) on a leaf of a deciduous bramble *Rubus* species. It was observed actually eating the leaf *in situ* (Plate 1). Waring and Townsend (2009. *Field Guide to the Moths of Great Britain and Ireland*, second edition) under the subheading of "foodplants" state: "Lichens and algae on trees, bushes, posts, walls and rocks. Also feeds on leaves, particularly Hawthorn in hedgerows. Accepts Blackthorn, Traveller's-joy and Bramble." Porter (*op. cit.*) says that the larva feeds on lichens and algae growing on trees, bushes, walls, rocks and fences. He then says "also accepting withering sallow, bramble and dandelion leaves in captivity." Our observation shows that *Rubus* is used as a foodplant in the wild.

On 15 October 2014, BPH was helping with management work at Devon Wildlife Trust's Woodah Farm, Doddiscombsleigh, South Devon (VC 3). The task was cutting mature gorse and burning it. He decided to beat the upper parts of some of the European Gorse *Ulex europaeus* before it was thrown on the fire. Surprisingly, one larva of *E. lurideola* and one larva of Scarce Footman *E. complana* (L.) appeared on the beating tray. Although there were algae and small amounts of lichen low down on the gorse stems, there were none high in the gorse. In captivity both larvae thrived, feeding on the living and dead flowers of Gorse. Although care has to be taken in extrapolating this observation to what actually was happening in the wild, it does seem highly likely that these larvae had been feeding on the Gorse flowers prior to being found. For the foodplants of *E. complana,* Waring and Townsend (*op. cit.*) state: "Lichens and algae on rocks, walls, posts, plant stems, branches and the ground. Will

Plate 1. Common Footman *Eilema lurideola* larva on the leaf of a deciduous Rubus species showing part of the leaf having been eaten and frass present.

Plate 2. Dingy Footman *Eilema griseola* larva feeding on a moss in the genus Barbula.

eat decaying leaves in captivity." Porter (*op. cit.*) says "various lichens and algae; also accepting knot-grass and withered sallow, bramble and dandelion leaves in captivity."

On 23 June 2013 BPH found a larva of Dingy Footman *Eilema griseola* (Hb.) in his garden at Abbotskerswell, South Devon (VC 3). It was on a stone, feeding on a moss in the genus *Barbula* (Plate 2). In captivity it continued to feed on the same moss. Porter (*op. cit.*) gives the foodplants as various algae and lichens. He also says: "also accepting withered sallow and dandelion leaves in captivity." Waring and Townsend (*op. cit.*) also give algae and lichens, but then say: "In captivity will eat mosses and withered leaves."

In summary we have confirmed new foodplants in the wild for larvae of *E. lurideola* (*Rubus* sp.) and *E. griseola* (*Barbula* sp.). We have found evidence from field observation, although not proof, that *C. mesomella* uses *Rubus fruticosus* agg. in the wild and that *E. lurideola* and *E. complana* feed on living and dead flowers of *Ulex europaeus*.

We are grateful to Mr F.R. Jeffery for his help in identifying the moss from a photograph.

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Epinotia subocellana (Donovan) (Lep.: Tortricidae) larva using an old gall as a habitation

On 2 September 2014, RL was searching sallows *Salix* for caterpillars at Glack Harnes near the foot of Ben Rinnes in Banffshire. Many spindle-shaped galls about 2cm long were found on the young stems of one small bush (probably a *S. aurita* hybrid). Each gall contained a tiny white grub, too small to identify in the field and perhaps not even a lepidopteron.

One older gall, presumably from the previous year, had a small round exit hole. Inside the gall was a much larger larva, which occasionally poked its head and thoracic segments out of the hole as if to check on the disturbance, then retreated back inside. This larva did appear to be a caterpillar rather than a grub, so it was taken home for rearing.

The occupied gall was placed in a container with a few springs of *S. aurita*. Damage to the leaves, and frass widely scattered over the floor of the container, showed that the caterpillar was coming out each night to feed, then returning to the gall before morning. Suspecting it to be a micro, RL passed it on the MRY. It was now offered *S. cinerea* and continued to behave as before, until leaving the gall to pupate.

Using Redfern, Shirley & Bloxham (2002. *British Plant Galls*. AIDGAP, Field Studies Council Publications) and with help from internet images, MRY identified the gall as that of a sawfly, probably *Euura atra* (Jurine) – Tenthredinidae. He also

suggested that the caterpillar would most likely be *Epinotia subocellana*, as proved to be the case when the moth emerged in April 2015.

According to Bradley & Tremewan (1979. *British Tortricoid Moths*. Ray Society, London), the larva of *E. subocellana* normally lives between two sallow leaves spun flatly together. This use of an old sawfly gall as an alternative habitation was presumably opportunistic. Nevertheless, it seems remarkable that the larva occupied the gall so consistently, leaving it nightly to wander around and feed, but always returning.

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Brown-tails *Euproctis chrysorrhoea* (L.) and Spindle Ermine larvae *Yponomeuta cagnagella* (Hb.) at Loves Farm estate, St Neots, Huntingdonshire

The following article highlights the possible consequences of importing plants from abroad without them being thoroughly checked for unwanted pest species.

On 22 May 2013, I was contacted by my local District Council about an infestation of Brown-tail moth *Euproctis chrysorrhoea* caterpillars on the new Loves Farm estate, which is being built on the outskirts of St Neots, Huntingdonshire. The council had received a report from a member of the public that there were several webs of *Euproctis chrysorrhoea* caterpillars in the bushes, so after receiving details of the location I went the following day and found a few webs. I collected a few caterpillars to breed and contacted the council to say that I had found a few nests; however, as it was Saturday and my granddaughters were due to arrive I did not search the entire plantation in this area. The following Monday I returned to the site, this time approaching from the opposite direction and soon found several bushes stripped of their leaves. I checked them and found that they were Spindle bushes *Euonymus europaeus* and that they were covered in the webs and caterpillars of the Spindle Ermine moth *Yponomeuta cagnagella*. There were thousands of caterpillars spread over most of the Spindle bushes that had been planted by the developers. I then walked towards the opposite end of the plantation and was soon finding several trees and bushes with large numbers of *Euproctis chrysorrhoea* caterpillars on them. This I reported to the council who contacted me the following day to say that two staff from Little Paxton Pits LNR had collected many of the caterpillars a few days previously. However, it was apparent that they had not been to the area searched by me, as there were still many webs with caterpillars.

I was asked to contact the staff at Little Paxton Pits LNR, which I did and the following day, we arranged to meet on site to collect the remaining caterpillars. We met at 14.00 hours in rain, which although inconvenient for us did show the webs to advantage as they were more obvious when wet because under the weight of the water the branches and leaves hung down exposing the inner parts of the trees and bushes. Furthermore, wet webs meant we were in less danger of coming into contact with the

Plate 1. Post-hibernation larvae of Brown-tail moth *Euproctis chrysorrhoea* emergeing from their hibernaculum at St Neots, 21 April 2014.

hairs of the caterpillars, which can cause a severe skin rash and if inhaled can cause breathing problems. As we searched for and collected the webs and caterpillars from the many trees and bushes affected, it soon became apparent that we would not be able to complete the task. We filled four large plastic sacks with webs and only collected a small percentage of the infestation. The larvae were feeding on hawthorn *Crataegus* spp., Blackthorn *Prunus spinosa*, apple *Malus* spp., cherry *Prunus* spp., Oak *Quercus* spp., Beech *Fagus sylvatica* and willow *Salix* spp., in their thousands.

Euproctis chrysorrhoea was very rare in Huntingdonshire, with only 57 previous records in the county database at the end of 2012, all adults taken at light. This infestation appears to have been introduced along with the bushes and trees, that I have since been informed were imported from Holland, possibly a few years previous when low numbers were present, and had remained undetected since, but now that the population has grown, the webs have become much more obvious. It is probable that *Yponomeuta cagnagella* was also introduced along with the trees and shrubs. However, this species does not pose a problem to public health and they are host-specific, feeding exclusively on Spindle.

After much discussion and consultation it was eventually decided to spray the remaining webs and caterpillars, as is usual where there are large infestations, in an attempt to bring them under control and before any children discovered the caterpillars. I returned to the site in October for a general look around and also to record any leaf mining Lepidoptera and noticed that many of the trees and bushes that had been stripped of leaves by the *Euproctis chrysorrhoea* caterpillars had recovered and were now well-clothed with leaves. The *Crataegus* spp. and *Prunus spinosa* seemed to be doing particularly well.

I then heard, in December, that the webs had not been sprayed, so no control had been implemented, so I revisited the site and now that the leaves had fallen I could see many dozens of *Euproctis chrysorrhoea* hibernacula, so once again I contacted the council explaining to them that during the coming spring there were likely to be tens of thousands of caterpillars roaming the estate. The council decided that we should cut out the hibernacula and that they would be destroyed, so during the following February a group of us walked round the infected area of the estate and cut out hundreds of hibernacula, which were removed from the site and burnt.

I revisited the area cleared of hibernacula on a couple of occasions during the early summer of 2014 and little damage was found on the bushes and trees on that part of the estate, however later in the summer I was shown a photograph of *Euproctis chrysorrhoea* caterpillars swarming over a car, which the owner had tried to remove with a pressure sprayer, but as fast as they were washed off they were returning to the car. I was then contacted by the council again who inform me that many more hibernacula had been found in other areas of the estate. I returned to the estate and saw that the bushes in the area worst affected during the previous year had been cut down to about three feet tall, whereas they had previously been about ten feet in height. I doubt that this 'pruning' had anything to do with controlling *Euproctis chrysorrhoea*, but had more to do with the location of the bushes as they are only about six feet from the front of houses, so pruning them to the lower height would eventually make a hedgerow; allowing them to grow tall would ultimately block light from the houses and also encroach onto the pathway along the front of the houses. I did search these bushes, but failed to find any new hibernacula, although I did find several remains of last year's 'nests'. I was also contacted by a friend who has an allotment about a mile from the Loves Farm Estate who told me that he had a couple of hundred caterpillars on his plum *Prunus* spp. tree. I checked them and these I confirmed as *Euproctis chrysorrhoea* caterpillars, which he destroyed by spraying.

In the autumn of 2014 I was once again contacted by the council who informed me that many more hibernacula had been found in other areas of the estate including in trees and bushes planted in gardens. The Council have now decided that they will employ a specialist company to search and destroy the caterpillars once they are on the move again during the spring of 2015. I suspect that this will involve an intense regime of spraying which will also destroy all the other invertebrates on the site, which is far from ideal, but the council have a commitment to safeguard the public and as the infestation has got to plague proportions there seems little alternative than to take this drastic action.

I revisited the site in mid-April 2015 on a warm sunny day and soon found several hibernacula in previously uninfected areas all of which had caterpillars sitting on them which were beginning to wander along the branches looking for young leaves to eat. Whether they will be sprayed and controlled during the next few weeks remains to be seen, however this will only control those that are on the estate. During the winter of 2013/14 I received sixteen records of *Euproctis chrysorrhoea* at light from various moth trappers in the county and during the winter of 2014/15 I received a further

twenty records of *Euproctis chrysorrhoea* at light, the largest number of records for a single year. Whether all these originate from the Loves Farm population is difficult to determine, however in the right conditions moths can easily travel several miles. No doubt some of these records come from other sources, but those within a few miles of Loves Farm could easily be from this population. I await records for this coming summer with interest.

An addendum to the above: During early March 2015 I was travelling from Bedford back to St Neots with a friend and noticed dozens of *Euproctis chrysorrhoea* hibernacula in the hedgerow alongside the 'new' Bedford by-pass, the A421 road. I contacted Bedfordshire Highways department via e-mail, but have never received a reply. The bushes are now in leaf, so the hibernacula are hidden. I suspect that what was once a very rare moth in this part of the country will soon be one of the commonest as their populations grow and spread.

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Macaria alternata (D. & S.) (Lep.: Geometridae): the first confirmed record of Sharp-angled Peacock in Bedfordshire

A single Sharp-angled Peacock was trapped in Biggleswade on 21 July 2014 by Lionel Burgess. The moth was initially photographed through a perspex sheet on the moth trap. Unfortunately, it instantly flew off when the sheet was removed and disappeared. The photograph was sent to the County Macro-moth Recorders for perusal, but as we had little personal experience of *Macaria alternata* and since *M. notata* (Peacock Moth) was the expected species in Bedfordshire, we sent the photo to Colin Plant (Hertfordshire) and Barry Dickerson (Huntingdonshire) for comments. Both agreed it was *Macaria alternata*.

Macaria alternata (as *Semiothisa alternaria* (Hb)) was noted in Arnold, Baker, Manning & Woiwod (1997. *The Butterflies and Moths of Bedfordshire*) as having been claimed for the county from a sighting in 1959 at Bedford by T. Peet. However, Arnold states that without a voucher specimen confusion with *M. notata* was a possibility. The current County Recorders have not accepted this earlier record and are not aware of any other records prior to the one trapped in July 2014 which, therefore, becomes the first confirmed record of the species in VC30.

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Larvae of *Pieris brassicae* (L.) and *P. rapae* (L.) in winter (Lep.: Pieridae)

On 26 December 2012 I found 62 larvae of *Pieris brassicae* in their final instar feeding on a *Brassica* at Abbotskerswell, South Devon (VC 3). One that I had brought into

captivity in my garage pupated on 24 January 2013, the temperature at the time was 3°C. On 28 January, I found two *P. rapae* larvae on the same plants and one *Autographa gamma* larva. There were 12 *P. brassicae* larvae still there. I put a sleeve over one of the plants and when I opened it on 15 April there was one *P. rapae* pupa inside. I brought it into captivity, keeping it in the garage. On 25 May a male *P. brassicae* emerged and *a P. rapae*, but the latter failed to expand its wings properly.

Feltwell, (1989. In Emmet, A.M. & Heath, J., (Eds.) *The Moths and Butterflies of Great Britain and Ireland* **7** (1): 104-105. Harley Books) states that *P. brassicae* always over-winters as a pupa. In a somewhat contradictory statement he also says that larvae occur from early May to early December, very occasionally into January. I can find no reference to *P. rapae* over-wintering in any stage other than the pupa.

Richard Fox (Surveys Manager for Butterfly Conservation) tells me that records of *P. brassicae* larvae continuing to feed and develop through the winter are becoming more common, though he is not aware of a previous record of *P. rapae* larvae doing so.

I am grateful to Sue and Pete Leggett for allowing me to study these larvae in their garden.

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Record of a larva of the Scarce Bordered Straw *Helicoverpa armigera* (Hb.) (Lep.: Noctuidae) in the wild

The larva of the Scarce Bordered Straw *Helicoverpa armigera* (Hübner) has rarely been found in the wild. The records are listed by Parsons, M.S. & Davey, P. (2007. *Entomologist's Record* **119**: 185-192). They are from: Red Geranium *Pelargonium sp.* on the Isle of Wight, Tree Mallow *Lavatera arborea* in Cornwall and in Devon I have found one on the seeds of Yellow Rattle *Rhinanthus minor*, several together on the seeds of *Antirrhinums* and one on a flower of Devils's Bit scabious *Succisa pratensis*.

I can now add a further record. That is a larva which was undoubtedly *H. armigera* which I found crawling up the wall of a house in the centre of Newton Abbot, South Devon (VC 3) on 19 August 2008. There was only one plant in the vicinity which was Mexican Fleabane *Erigeron karvinskianus*. It was growing in a small gap between the pavement and the house wall. In captivity the larva did feed on a flower of that plant, but died a few days later.

I have checked immigration reports published in this journal for the years from 2007 to 2011 since the publication of the paper cited above; these contain no further reports of wild larvae. However, all those years with the exception of 2007, do record imported larvae. My larval record from 19 August 2008 is listed, but not the circumstances of its discovery, so it would have been unclear to readers whether it was a wild or imported larva.

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BOUDINOTIANA PUELLA MEDITERRANEA (GANEV, 1984) (LEP.: GEOMETRIDAE) – NEW GENUS AND NEW SPECIES FOR GREECE

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Abstract

The genus *Boudinotiana* Leraut, 2002 (= *Archiearis* auct. = *Brephos*) represented by the taxon *Boudinotiana puella mediterranea* (Ganev, 1984) is reported here for a first time from Greece.
Keywords: Greece, Lepidoptera, Macrolepidoptera, Geometridae.

Introduction

The range of *Boudinotiana puella puella* (Esper, 1787) is restricted to Austria, Czech Republic, Slovakia, Hungary, Moldova, Romania and South Russia (Hausmann, 2001: 88; Leraut, 2009: 34) and Northern Serbia (Vojvodina, Novi Sad) (Tomic at al., 2002: 87). There are no recently confirmed reports for Switzerland, Germany, Italy and Dalmatia (Hausmann, 2001: 88; Leraut, 2009: 34). According to Beshkov (2010) the nominotypical subspecies also occurs in Bulgaria at Varna, on the Black Sea Coast.

Reports for the Balkans

The subspecies *mediterranea* Ganev, 1984 of *Boudinotiana puella* is described from Kozhouh [Rupite]), near the Struma River in the Petrich area of south-western Bulgaria. At present there are few other known localities, not especially far away from the type locality. The species is connected with *Populus alba* (Beshkov, 2010). In adjacent Macedonia, *B. p. mediterranea* was recently found in two localities – in the areas near the towns of Strumitza and Veles (Beshkov & Gashtarov, 2014). In both these localities. *Populus alba* is well represented.

New reports

The distribution of the known localities in south-west Bulgaria and southern Macedonia suggest that *B. p. mediterranea* should also occur in northern Greece. It is entirely possible that the absence of reports, until now, are a consequence of the lack of any native lepidopterologist engaged with Heterocera, especially in view of the very early flight period. In south-west Bulgaria *B. p. mediterranea* is on the wing from the end of January to the end of March, depending on the year. The fight period coincides with the period when leaf buds burst open and husks are dropping, causing a noise that sounds like quiet rain.

In northern Greece we found *Boudinotiana puella mediterranea* on 1.iii.2015 in several places over a distance of about 1.5 km in one locality in the Strimon Valley at the Roupel gorge, between Promachonas and Neo Petritsi villages, c.60 m, as follows: N41°18'22": E023°20'12"; N41°19'33": E023°20'47"; N41°18'22": E023°20'30";

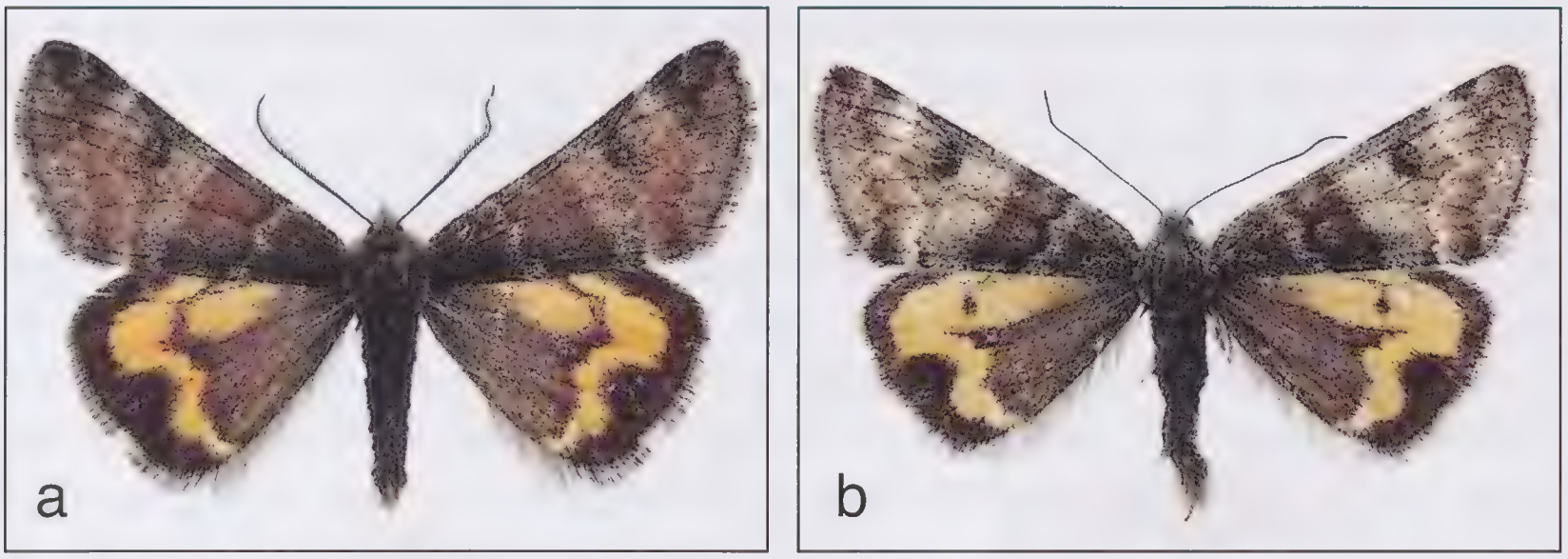

Plate 1. *Boudinotiana puella mediterranea* (Ganev, 1984), Northern Greece. 1.iii.2015, S. Beshkov leg. a. male; b. female.

Plate 2. Capture locality of *Boudinotiana puella mediterranea*, Northern Greece, Strimon Valley at the Roupel gorge, between Promachonas and Neo Petritsi villages, 1.iii.2015. Terraces of *Populus alba* and *Platanus orientalis* along the banks of a large river.

N41°19'57": E023°20'29" and N41°20'00": E023°20'27". The habitat involves the banks of a big river with terraces of *Populus alba* and *Platanus orientalis*. *Boudinotiana puella mediterranea* was abundant, flying only when the sun was shining and high along the trees – seldom going close to the ground. At present this is the most southern known locality for *B. puella*, but it seems very possible that it may be discovered further south in Greece. In Central Europe *B. puella puella* is threatened with extinction and it is already extinct in several countries. Data from the Balkans are scarce and although habitat is protected under *EEC 92/43 Habitat Directive* there are marginal populations which are very sensitive.

Taxonomy

Differences from the nominotypical *puella* (Esper, 1787) are given in the primary description, in Hausmann (2001:88) and in Leraut (2009: 34). *Boudinotiana puella mediterranea* (Ganev) is slightly smaller then *B. puella puella*, hindwings upperside are more intensively coloured, appearing more orange-reddish than yellowish-orange as it is in the nominotypical subspecies (in *B. puella puella* the hindwings are also paler). According to Hausmann (2001: 88) in *puella mediterranea* the forewing undersides are yellowish-red. The male genitalia are almost the same in both taxa and the differences between them in the description of Ganev seems not to be constant, but there are some slight differences in the female genitalia (Hausmann, 2001: 88).

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The antennae of Twin-spotted Quaker *Anorthoa (= Orthosia) munda* (Lep.: Noctuidae)

In the standard work on European noctuid moths, Ronkay *et al*. (2001) describe the antennae of female Twin-spotted Quaker *Anorthoa munda* as "filiform". However, Berio (1985) describes them as "shortly biserrate", while Heath & Emmet (1979) describe them as "bipectinate". These three descriptions are strikingly different from each other and the purpose of this note is to clarify the situation. Filiform antennae are roughly cylindrical with no projections. Biserrate implies two rows of saw-like teeth, while bipectinate means two rows of long thin teeth (Imms, 1957). The antennae of male *munda* are beautifully bipectinate (Fig. 1).

Figure 2 shows the antenna of a mounted female *munda* viewed from behind and Figure 3 shows a living female viewed from the front. Both show the antennae to be biserrate, in agreement with Berio (1985). Figures 4 to 6 show live female *munda* viewed from other angles.

Because the serrations are short and the two forward-pointing rows are not well separated from each other, as can be seen in Fig 5, the antenna can appear monoserrate (Fig 4) or filiform (Fig. 6) depending on the angle of view. This may explain why Ronkay *et al*. (2001) considered them to be filiform.

As well as *munda*, I examined other *Orthosia* species that were locally available, namely Hebrew Character *O*. (*Semiophora) gothica*, Clouded Drab *O*. (*Orthosia) incerta*, Small Quaker *O*. (*Monima) cruda),* Powdered Quaker *O*. (*Cororthosia) gracilis* and Common Quaker *O*. (*Monima) cerasi*. The female antennae of all these are broadly as described by Berio (1985) and Ronkay *et al*. (2001), being filiform or finely dentate depending on angle of view, except for *cerasi* which is best described as shortly biserrate but with smaller projections than female *munda*. As with the males, female *munda* has longer projections than females of the other five species, and it is in *munda* that the female antennae depart most from the filiform condition.

This may have taxonomic consequences. Berio (1980, 1985) placed *munda* in the subgenus *Anorthoa* when he created the latter as a new subgenus within the genus *Orthosia*. Ronkay *et al*. (2001) then elevated *Anorthoa* to generic status, giving the filiform female antenna as one of the most important diagnostic features of the new genus. The generic/subgeneric descriptions of antennae in Ronkay et al (2001) are summarized in Table 1.

They wrote: "*Anorthoa* occupies a somewhat transitional position between the *Perigrapha-Harutaeographa* genus-complex and *Orthosia* in the broad sense, being closest to *Harutaeographa*…..the female antenna [of *Anorthoa*] is filiform, as in most *Harutaeographa* taxa". They continued: "*Anorthoa* probably represents the sister-group of an ancient lineage of *Harutaeographa*… but its taxonomic rank is debatable…. The group has been treated by Beck (1996) as a subgenus of *Orthosia*." Thus both Beck and, before him, Berio regarded *Anorthoa* only as a subgenus. Filiform female antennae were crucial in defining and justifying the new genus *Anorthoa*, but the antennae of female *A. munda* are not filiform. Perhaps the argument in favour of generic rank, already "debatable", is weakened by that fact.

Fig 1. The bipectinate antenna of a living male Twin-spotted Quaker (Barcaldine, nr Oban, Argyll, 3 April 2015, photo J.C.A. Craik)

Fig 2. The biserrate antenna of a mounted female Twin-spotted Quaker viewed from behind (Capelulo, nr Bangor, Gwynedd, Wales, 7 April 1974, J.C.A Craik leg.)

Fig 3. The biserrate antenna of a living female Twin-spotted Quaker viewed from in front (Barcaldine, nr Oban, Argyll, 18 April 2015, photo J.C.A. Craik)

Fig 4. Antenna of same individual as in Fig 3, viewed from another angle and appearing monoserrate.

Fig 5. The biserrate antenna of a living female Twin-spotted Quaker with one row of projections not easily discernible as they lie in front of the antennal shaft (Barcaldine, nr Oban, Argyll, 8 April 2015, photo J.C.A. Craik)

Fig 6. Antenna of same individual as in Fig 5, from a higher angle and appearing filiform in outline.

Table 1. Generic/subgeneric descriptions of antennae of *Orthosia* sensu lato (after Ronkay et al, 2001).

Genus/Subgenus	***Description of antennae***	
	♂	♀
Anorthoa (munda)	bipectinate	filiform
Semiophora (gothica)	bipectinate	finely dentate
Orthosia (incerta)	biserrate with long fasciculate cilia	finely dentate
Cororthosia (gracilis)	biserrate with long fasciculate cilia	filiform
Monima (cruda and cerasi)	shortly or broadly bipectinate	dentate (*cruda*), biserrate (*cerasi*) or shortly bipectinate

Twin-spotted Quaker had been known as *Orthosia munda* since before 1939 (South, 1920 and 1939). All the other European "Quaker" species remain in genus *Orthosia* but, as a consequence of the elevation of *Anorthoa* to the level of genus by Ronkay *et al* (2001), the name *Anorthoa munda* for this species has appeared in some regional lists (e.g., Agassiz *et al*., 2013; Karsholt *et al*., 2013) but not in Waring & Townsend (2009).

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The use of a flight interception trap to record Lepidoptera

In 2011, I placed a much-modified Malaise trap in my garden, it being reduced in size to be less obvious and to fit into the site chosen, as well as being modified to be run as a live trap. The trap was placed adjacent to the junction of two boundary hedges and hung between two apple trees. The trap was erected on 1 July and taken down for the winter on 13 October in 2011, to be re-erected in 2012 on 26 February and removed on 14 October. Each day the collecting jar was emptied first thing in the morning and in the early evening.

A total of 524 individual moths were recorded of 141 species over the two years.

2011 Season

355 moths were recorded of 93 species, of which 39 were macro-moths, 12 were Pyralids and 42 were micro-moths. There were also 11 butterflies recorded of six species. The most frequently recorded moths were:

Agriphila straminella (D.&S.) (Crambidae), recorded on 41 occasions,

Brimstone Moth (L.) *Opisthograptis luteolata* (Geometridae), which occurred eight times, each time as a single individual and

Agapeta hamana (L.) (Tortricidae), recorded on 11 occasions.

Of the 93 species recorded, 52 appeared only once and only 24 species were recorded on more than two occasions. All macro-moths occurred as single individuals on any one night.

Six species of butterfly were recorded: Red Admiral *Vanessa atalanta* (L.), recorded four times; Ringlet *Aphantopus hyperantus* (L.), recorded three times and singles of Green-veined White *Pieris napi* (L.), Meadow Brown *Maniola jurtina* (L.), Gatekeeper *Pyronia tithonus* (L.) and Speckled Wood *Pararge aegeria* (L.).

The most species recorded on a single day/night was nine, on 4 July 2011. The greatest number of a single species over a day/night period was for *Celypha lacunana* (D.&S.) (Tortricidae) with seven individuals.

2012 Season

During the 2012 season, 169 moths were recorded of 72 species, of which 27 were macro-moths (with 18 new species for the trap); six were Pyraloidea (with three new species) and 39 were micro-moths (27 new species). The most frequently recorded were:

A. straminella, once again, the commonest species, recorded on 10 occasions;

Common Swift *Hepialus lupulinus* (L.) (Hepialidae), recorded on 12 occasions. This species was not recorded in 2011 due to the trap being erected after its flight period.

Blastobasis lacticolella (Rebel) (Blastobasidae), recorded on 10 occasions.

The Brimstone Moth, recorded on 8 occasions in the earlier year was only recorded once in 2012.

As in 2011, most species (52 out of 72 species) were recorded on a single occasion.

The Cocksfoot Moth *Glyphipterix simpliciella* (Stephens) occurred only once, but there were seven individuals.

There were three species of butterfly recorded: Speckled Wood, Large White *Pieris brassicae* (L.) and Small White *P. rapae* (L.).

As would be expected, the range of moths trapped was similar to those taken in my garden light traps. However, two malaise-trapped species, *Leucoptera malifoliella* (Costa) (Lyonetiidae) and *Adela reaumurella* (L.) (Adelidae) were new for the garden. Additionally, many of the smaller micro-moths were recorded more frequently in the malaise trap than in my light traps. At the other end of the size scale was the largest moth trapped, a Poplar Hawk-moth *Laothoe populi* (L.), along with the butterflies. Two species of migrant moth were recorded: Silver Y *Autographa gamma* (L.) (Noctuidae) on four occasions, once in 2011 and three times in 2012, and a single Diamond-back Moth *Plutella xylostella* (L.) (Plutellidae) in 2012.

The early morning collections recorded the majority of moths, but there was a noticeable accumulation from the evening gatherings. The latter consisted primarily of small micro-moths especially *Stigmella* and day-flying micro-moths, all the butterflies and the day-flying Yellow Shell *Camptogramma bilineata* (D.&S.).

Many invertebrates other than Lepidoptera were also trapped. The most numerous groups were, in descending order:

1. Diptera. All were released; only the hoverflies were retained and recorded.
2. Hymenoptera. Bees and wasps were recorded and all the parasitic wasps were retained and passed on to a recorder for identification.
3. Coleoptera. All specimens were retained for the county recorder.
4. Lepidoptera. All recorded.
5. Hemiptera/Homoptera. Only shield bugs were recorded, the remainder were released.

All the above were recorded regularly, but the following groups were trapped only on a few occasions:

6. Neuroptera.
7. Arachnida.
8. Orthoptera – two species recorded.
9. Trichoptera – one species recorded.

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Bristly Ox-tongue *Helminthotheca echioides* may be worth a second glance!

Bristly ox-tongue *Helminthotheca echioides* (syn. *Picris echioides*) is a member of the Asteraceae family and has numerous, fairly large yellow flowers. The flowers occur over a long time from mid-summer to the first frosts and in large numbers. Locally, there has recently been a large increase in the abundance and distribution of this species, to such an extent that it is the dominant flowering plant over large areas.

The flowers of ox-tongue attracted numerous species of insect, the most obvious being the butterflies ranging from the smaller Brown Argus *Aricia agestis* (D.&S.) and Common Blue *Polyommatus icarus* (Rott.), which feed by landing on the outer floret rays and probe down the inside of the corolla to the edge nectaries, to the larger butterfly species such as Large White *Pieris brassicae* (L.) and Peacock *Aglais io* (L.). These also landed on the outer rays, but could feed most of the way across the flower head using their longer proboscis which they extended horizontally over the top of the raised pollen-laden anthers to then probe down, using the articulated proboscis to reach the nectaries. They also adopted another feeding stance by alighting with legs astride the flower head, straddling the anthers keeping their bodies raised above the pollen and probing down with the proboscis. Silver Y *Autographa gamma* (L.) moths were seen settled on the outer rays and fed in a similar way to the large butterflies by extending their proboscis and probing down, being able to reach halfway across the flower head, whilst the micro-moth *Anthophila fabriciana* (L.) settled on the outer rays and walked down the corolla tube between the outer anthers and the inside of the corolla tube to reach the nectaries to feed, before backing out and repeating the process.

Many other insects used the flowers, adopting different feeding strategies. At least six species of hoverfly were recorded crawling over the anthers feeding on the pollen, at least three bumble bee species and the Honey Bee *Apis mellifera*, as well as several solitary bee species, were seen diving through the anthers becoming covered in pollen to reach the nectaries.

My interest in looking at the ox-tongue more closely was initiated whilst recording Narrow-bordered Five-spot Burnet *Zygaena lonicerae* (Scheven). While counting the burnets feeding on large clumps of Birds-foot Trefoil *Lotus corniculatus* I noticed several individuals on the stems of the ox-tongue which did not move as I brushed past; on close inspection it became obvious that they were stuck. Some of the moths appeared newly hatched, being of a pristine appearance whilst others were very dull and tatty. Eventually 15 individuals were recorded on several plants, 11 were dead and four were alive but immobile. Trying to extricate the moths proved almost impossible, they were attached to the plant by legs, antennae, wings and body in general.

Microscopic investigation of the plant showed it to be covered in two sorts of hairs: thinly scattered, longer rigid bristle-like hairs, which are sharp to the touch and from where the plant probably gets its name, and a second form of modified shorter hair which had minutely hooked trifid heads; these hooked hairs acted like a natural "Velcro". This type of short hair with trifid heads, which covers the stems and leaves of plants, is usually an adaptation to reduce air flow and consequently reduce water loss.

Once I became aware that the ox-tongue was acting like a natural fly-paper I began to inspect numerous specimens of said species. Most plants inspected revealed nothing apart from a few seeds stuck to the hooks, until I looked on some plants at the water's edge of a nearby pond; this yielded a veritable treasure trove of invertebrates. Apart from the burnet moths, other species trapped were:

Odonata

Common Blue Damselfly *Enallagma cyathigerum* (Charpentier) trapped by its wings, and successfully released.

Common Darter *Sympetrum striolatum* (Charpentier) again trapped by its wings and successfully released.

Emerald Damselfly *Lestes sponsa* (Hansemann) attached by wings and abdomen, which was spiralled around the stem; beyond help.

Two Azure Damselflies *Coenagrion puella* (L.) one male and one female trapped by their wings; both dead.

With the exception of the Emerald Damselfly they were all teneral (newly emerged) forms.

Lepidoptera

A single dead micro-moth – *Hedya nubiferana* (Haw.) (Tortricidae).

Arachnida

Three dead examples of *Tetragnatha extensa* (L.) (Tetragnathidae), a long-legged species, the legs of which were entangled in the trifid hairs.

Diptera

One dead hoverfly (Syrphidae) – *Episyrphus balteatus* (Degeer);

Two crane flies (Tipuloidea) – different, unidentified species;

Two unknown Diptera of the same species.

Neuroptera

One green lacewing (Chrysopidae) – *Chrysopa perla* (L.).

Trichoptera

Three examples of *Neureclipsis bimaculata* (L.) (Polycentropidae).

Coleoptera

Three soldier beetles (Cantharoidea) – all apparently the same species.

The only places I recorded trapped invertebrates were at areas where they were perhaps concentrated for some reason, be it feeding or at the narrow strip around a large pond, where various species were emerging. Many of the trapped specimens were freshly emerged and especially in the Odonata, were poor fliers after initial emergence and tended to settle for prolonged periods to harden their wings, which was when they probably became entangled with the small trifid hairs. The burnet

moths did not hatch from cocoons on the ox-tongue as none were found on them, so must have settled on the plants after feeding or whilst waiting to find a mate attracted to the birds-foot trefoil.

The trifid hairs on the ox-tongue obviously are of benefit to the plant, as previously mentioned in relation to reducing water loss, rather than to ensnare invertebrates. However, it is a site I will certainly be checking again for such records.

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Blackthorn *Prunus spinosa* L.: a larval foodplant of *Swammerdamia pyrella* (Villers, 1789) (Lep.: Yponomeutidae)

Agassiz *in* Emmet (1996. *The Moths and Butterflies of Great Britain and Ireland* **3**: 59) gives the larval foodplants of *Swammerdamia pyrella* (Villers, 1789) as apple *Malus* spp., pear *Pyrus* spp. and hawthorn *Crataegus* spp. in the British Isles. To these can now be added Blackthorn *Prunus spinosa* L. as a result of larvae that we found feeding on leaves of this on 30 September 2014 at Berry Head, Devon. The larvae were locally common. Their appearance is distinctive but because *Prunus spinosa* had apparently not been previously recorded as a British foodplant we collected a few just to be sure. Confirmation of our identification was provided when moths emerged in March this year.

It is not entirely surprising that the larva feeds on *Prunus spinosa* because it is also known to feed on 'cherry'. This name was given as a larval foodplant at least as long ago as 1870 (Stainton, 1870. *The natural History of the Tineina* **11**: 76-78). Meyrick (1895. *A Handbook of British Lepidoptera*: 770; [1928]. *A revised Handbook of British Lepidoptera*: 737) and Ford (1949. *A Guide to the smaller British Lepidoptera*: 139) also give 'cherry' or 'Cherry'. None gives the scientific name but it is likely that Wild Cherry *Prunus avium* (L.) L. or one of its cultivars was intended. No species of 'cherry' is cited by Agassiz *in* Emmet (*loc. cit.*) but *Prunus cerasus* [Dwarf Cherry *Prunus cerasus* L.] was included as a larval foodplant in 1988 (Emmet, 1988. *A field Guide to the smaller British Lepidoptera* (edn 2): 76). *Prunus cerasus* is much confused with *Prunus avium* and perhaps over-recorded (Stace, 2010. *New Flora of the British Isles* (edn 3): 197) and so it is possible that the latter was the species intended in the 1988 publication. It is unclear why no species of 'cherry' was cited in 1996.

None of the publications referred to in the above paragraph cite *Prunus spinosa* as a larval foodplant. As *Swammerdamia pyrella* is a common and widespread species where its foodplants occur then it is strange that it has not, apparently, been recorded previously from *Prunus spinosa*.

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SOME NEW FOR SERBIA AND RARE LEPIDOPTERA SPECIES COLLECTED AT LIGHT IN EASTERN SERBIA

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Abstract

Charissa onustaria (Herrich-Schäffer, 1852), *Dyscia innocentaria* (Christoph, 1885) and *Egira anatolica* (Hering, 1933) are reported as new for the Republic of Serbia from the eastern part of the country. The set moths and their genitalia are illustrated. Some other rare species of late autumn and early spring appearance are also reported from eastern Serbia.
Keywords: Serbia, faunistics, Lepidoptera, Macrolepidoptera.

Introduction

The Lepidopteran fauna of the Republic of Serbia is relatively well-explored. However, even amongst the butterflies (Papilionoidea) and skippers (Hesperioidea) many new species for the country have been found in the last few years, mostly in the south. Nocturnal species are better explored in northern, western, central-western Serbia and in Timočka Krajina in eastern Serbia. In recent years several new nocturnal moths were also reported, but a significantly limited number of researchers is the main reason why many promising areas remain unexplored – the late autumn and early spring fauna especially so.

During the period from 2013-2014, I visited eastern Serbia several times and conducted night collecting, using lamps plugged in to a generator as well as several portable battery-operated light traps. One of my first visits, however, was in 2010 in the vicinity of Gorni Gornji Krivodol Village, Tzaribrod (= Dimitrovgrad) district, where I expected to find *Lignyoptera fumidaria* (Hübner, 1825) – species well presented in Bulgaria close to the Serbian border. In spite of intensive searching for this species, it has not been found there nor in the other places where I looked for it in 2013 and 2014 – the districts of Tzaribrod (Dimitrovgrad), Pirot and Bela Palanka towns. However, its presence there remains very possible. In the spring time near the Nišava River I searched for *Boudinotiana puella mediterranea* Ganev, 1984, a subspecies not reported from Serbia, but perhaps present. Results from night collecting were much better and three new species for Serbia were found. Many other species caught are new for eastern Serbia and of these most are represented in very few localities.

Inventory of species

To save space and repetition, the eight collecting localities are coded as follows:

A Above Tzaribrod (= Dimitrovgrad) town, 757m, N43°1'42": E22°49'20"
B Jelashnichka Klisura, Nish Region, 345m, N43°16'36": E22°4'09" (See Plate 1)

C Pirot Region, Jerma Gorge, near Poganovo, 577m, N42°57'57": E22°32'14"
D Vidlich Mts, Pirot Region, below the summit of Crni Vrv, 1046m, N43°10'51": E022°38'52"
E Smilovski jezera near Tzaribrod (=Dimitrovgrad) Town, 689m, N43°02'27": E22°49'07"
F Smilovtzi Village near Tzaribrod (= Dimitrovgrad) town, 771m, N43°03'29": E22°50'09"
G Stara Planina Mountains, Knjazhevac Region, near Ravna village, 217m, N43°38'18.8": E22°15'38.2"
H Pirot Region, Jerma Gorge, Zvonachka Banja,

Drepanidae

Polyploca ridens (Fabr., 1787). Locality A, 7.vi.2014, S. Beshkov leg.

Geometridae

Dasycorsa modesta (Stdgr, 1879). Locality B, 18.iii.2014, S. Beshkov leg. at light traps; Locality A, 17.iii.2014 and 7.iv.2014, S. Beshkov leg.

Crocallis tuscearia (Borkhausen, 1793). Locality C, 22.x.2013, S. Beshkov leg. at lamps and light traps; Locality A, 20.x.2013, S. Beshkov leg. at lamps and light traps.

Agriopis leucophaearia ([D.& S.], 1775). Locality C, 22.x.2013, S. Beshkov leg. at lamps and light traps.

Agriopis bajaria ([D.& S.], 1775). Locality B 10.xi.2013, S. Beshkov leg. at light traps; Locality D, 11.xi.2014, S. Beshkov leg., at light traps.

Charissa onustaria (H.- S., 1852). Locality B, limestone rocky slopes, 18.iii.2014, one male and 8.iv.2014 three males (e.g., Plate 1), S. Beshkov leg., at light trap; Locality A, 7.iv.2014, S. Beshkov leg., at light traps, five males (Plate 2). Although this species can be identified without examination of the genitalia, two specimens were dissected and male genitalia of one of them are illustrated here (Plate 3). **New species for Serbia**. The speeis is not listed by Tomić *at al* (2002), in Fauna Europaea (*http://www.faunaeur.org/distribution_table.php*) nor in Zečević, M. (2002) or other recently published articles for Serbia and Europe. Not marked for Serbia in the distribution map by Leraut (2009).

Charissa variegata (Duponchel, 1830). Locality B, 18.iii.201 and 8.iv.2014, S. Beshkov leg. at light traps.

Dyscia innocentaria (Christoph, 1885) (= *sicanaria* Oberthür, 1923). Locality B, 8.iv.2014, S. Beshkov leg., 2 males (Plate 4). Genitalia of both specimens checked (Plate 5). **New species for Serbia.** Not presented in Tomić at al (2002), in Fauna Europaea (*http://www.faunaeur.org/distribution_table.php*) in Zečević, M. (2002) or other recently published articles for Serbia and Europe. Not marked for Serbia on the distribution map in Trusch & Erlacher, [2003] nor in Leraut (2009). In Tomić et al.

(2002: 100) *Dyscia conspersaria* ([D.& S], 1775) (*cuniculina* Hb. 1790; *cunicularia* Esp., 1803) is reported for Serbia. This name was erroneously used for *D. innocentaria*, but the used synonyms *cuniculina* Hbn. 1790; *cunicularia* Esp., 1803 are in fact synonyms of *D. conspersaria*. In Trusch & Erlacher, [2003] on the distribution map *D. conspersaria* is presented for Serbia, but localities for *D. innocentaria* are outside of the Serbian boundary. In Leraut (2009) there are no *Dyscia* species mapped for Serbia.

Lasiocampidae

Poecilocampa populi (L., 1758). Locality B, 10.xi.2013, S. Beshkov leg. at light traps, one female; Locality E, 09.xi.2013, S. Beshkov & V. Gashtarov leg. during day time, one male; Locality D, 11.xi.2014, S. Beshkov leg. at light traps.

Eriogaster catax (Linnaeus, 1758). Locality C, 22.x.2013, S. Beshkov leg., one male at lamps; Locality A, 20.x.2013, S. Beshkov leg., at lamps, one female and 9.xi.2013, S. Beshkov & V. Gashtarov leg., eggs on *Crataegus monogyna* Jacq.

Saturniidae

Saturnia caecigena (Kupido, 1825). Locality A, 20.x.2013, S. Beshkov leg., at lamps and light traps; Locality F, 21.x.2013, S. Beshkov leg.

Notodontidae

Drymonia ruficornis (Hufn., 1766). Locality A, 7.iv.2014, S. Beshkov leg.

Peridea anceps (Goeze, 1781). Locality B, 8.iv.2014, S. Beshkov leg. at light trap; Locality A, 7.iv.2014, S. Beshkov leg.

Nolidae

Nola cicatricalis (Treitschke, 1835). Locality B, 08.iv.2014 , S. Beshkov leg. at light traps; Locality A, 7.iv.2014, S. Beshkov leg. at light traps. According to Stojanović and Ćurčić (2011: 57), this species is known only from Northern Serbia.

Erebidae

Diaphora luctuosa (Geyer, [1831]). Locality H, 16.v.2007, S. Beshkov leg., one dead dry specimen in a building.

Ocnogyna parasita (Hb., 1790). Locality B, 18.iii.2014, S. Beshkov leg. at light traps.

Noctuidae

Moma alpium (Osbeck, 1778). Locality H, 16.v.2007, S. Beshkov leg., on lamp in a building.

Calophasia opalina (Esper, [1794]). Locality B, 08.iv.2014, S. Beshkov leg. at light trap.

Brachionycha nubeculosa (Esper, 1785). Locality A, 16.iii.2014, S. Beshkov leg., several specimens.

Callopistria latreillei (Dup., 1827). Locality B, 23.x.2013 and 10.xi.2013, S. Beshkov leg. at light traps.

Caradrina flavirena Guenée, 1852. Locality B, 8.iv.2014, S. Beshkov leg.

Cleoceris scoriacea (Esper, [1789]). Locality G, 30.ix.2013, S. Beshkov leg., resting on lamp.

Tiliacea citrago (L., 1758). Locality C, 22.x.2013, S. Beshkov leg. at lamps and light traps; Locality A, 20.x.2013, S. Beshkov leg. at lamps and light traps.

Xylena lunifera (Warren, 1910). Locality B, 23.x.2013 and 10.xi.2013, S. Beshkov leg. at lamps and light traps.

Dichonia aeruginea (Hb., [1808]). Locality A, 20.x.2013, S. Beshkov leg. at lamps and light traps.

Dasypolia templi (Thunb., 1792). Locality B, 10.xi.2013, S. Beshkov leg. at light traps, six males; Locality D, 11.xi.2014, S. Beshkov leg. at light traps, 8 males. According to Vasić (2002: 227), *D. templi* is known in Serbia only from the Timočka Krajina; according to Stojanovic & Curcic (2011) it is present in Eastern Serbia only.

Orthosia populeti (Fabr., 1781). Locality A, 17.iii.2014, S. Beshkov leg. at light trap.

Orthosia opima (Hb., [1809]). Locality A, 16.iii.2014, S. Beshkov leg. at light trap.

Egira conspicillaris (L., 1758). Locality A, 6.iv.2014, S. Beshkov leg. at light trap, four males. Locality B, 8.iv.2014, S. Beshkov leg. at light traps (Plate 6), five males and one female. Genitalia of all male specimens were checked for its closely related species *Egira tibori* Hreblay, 1994, but that species was excluded. Differences in the male genitalia, including everted vesicae of the European *Egira* species are described and illustrated recently in this journal (Beshkov, 2014); here only a single aedeagus, without eversion of the vesica, is illustrated (Plate 7) for comparison with *Egira anatolica* at Plate 9.

Egira anatolica (Hering, 1933). Locality B, 8.iv.2014, limestone rocky slopes, S. Beshkov leg., at light traps, four males (Plate 8), genitalia of all specimens checked. Male genitalia including aedeagi and everted vesicas of the European *Egira* species are illustrated in this journal (Beshkov, 2014); here only single genital armature and aedeagus without everted vesica are illustrated (Plate 9) as proof of correct identification. *Egira anatolica* however can be split from the other *Egira* species even by appearance – forewings are broad, with more reddish and grey scales, hind wings are greyish with dark scales, not bright like the other species of the genus. **New species for Serbia**. Not presented in Vasić (2002), in Fauna Europaea *http://www.faunaeur.org/distribution_table.php*, in Zecevic, M. (2002), in Stojanovic, Curcic & Nestorovic (2011), in Stojanovic & Curcic (2011) nor in other recently published articles for Serbia and Europe. Perhaps it can be found in other parts of the former Yugoslavia?

Plate 1. Jelashnicka Klisura, collecting locality, early morning 9.iv.2014.

Plate 2. *Charissa onustaria*, male, above Tzaribrod, 7.iv.2014.

Plate 4. *Dyscia innocentaria*, male, Jelasnicka Klisura, 8.iv.2014.

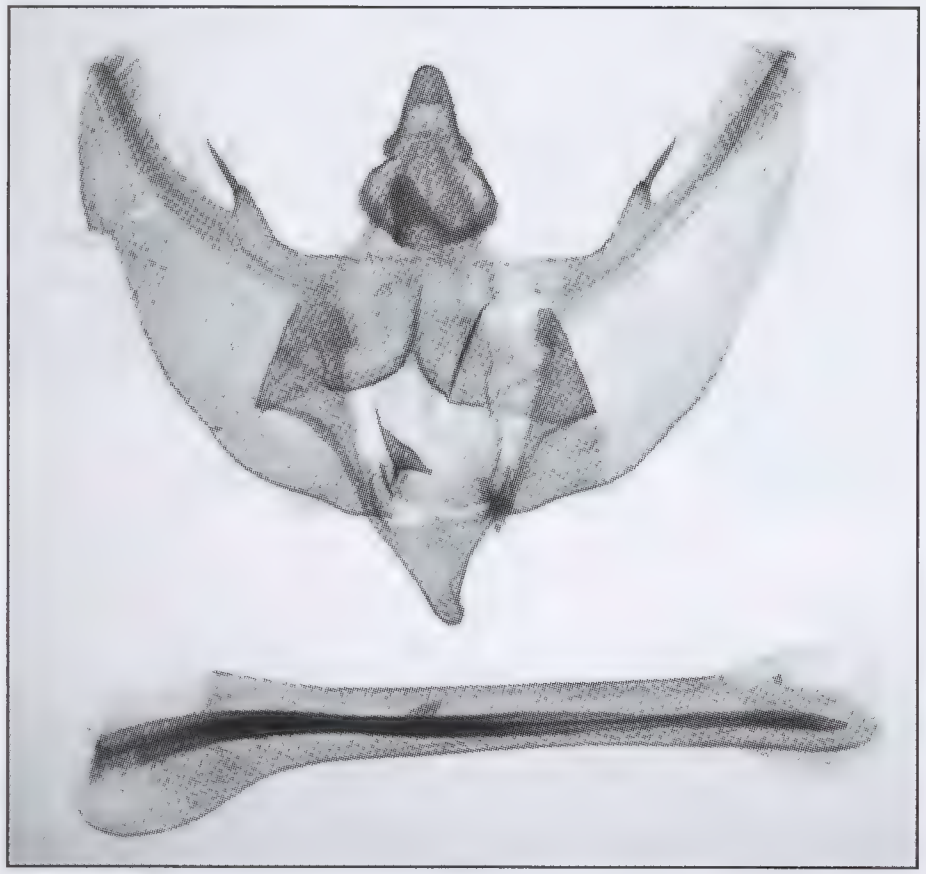

Plate 3. *Charissa onustaria*, above Tzaribrod, 7.iv.2014, male genitalia, Gen. prep. 1./28.12.2014, S. Beshkov.

Plate 5. *Dyscia innocentaria*, male genitalia, Jelasnicka Klisura, 8.iv.2014.

Plate 6. *Egira conspicillaris*, male, Jelasnicka Klisura, 8.iv.2014.

Plate 8. *Egira anatolica*, male, Jelasnicka Klisura, 8.iv.2014.

Plate 7. *Egira conspicillaris*, aedeagus, above Tzaribrod, 6.iv.2014.

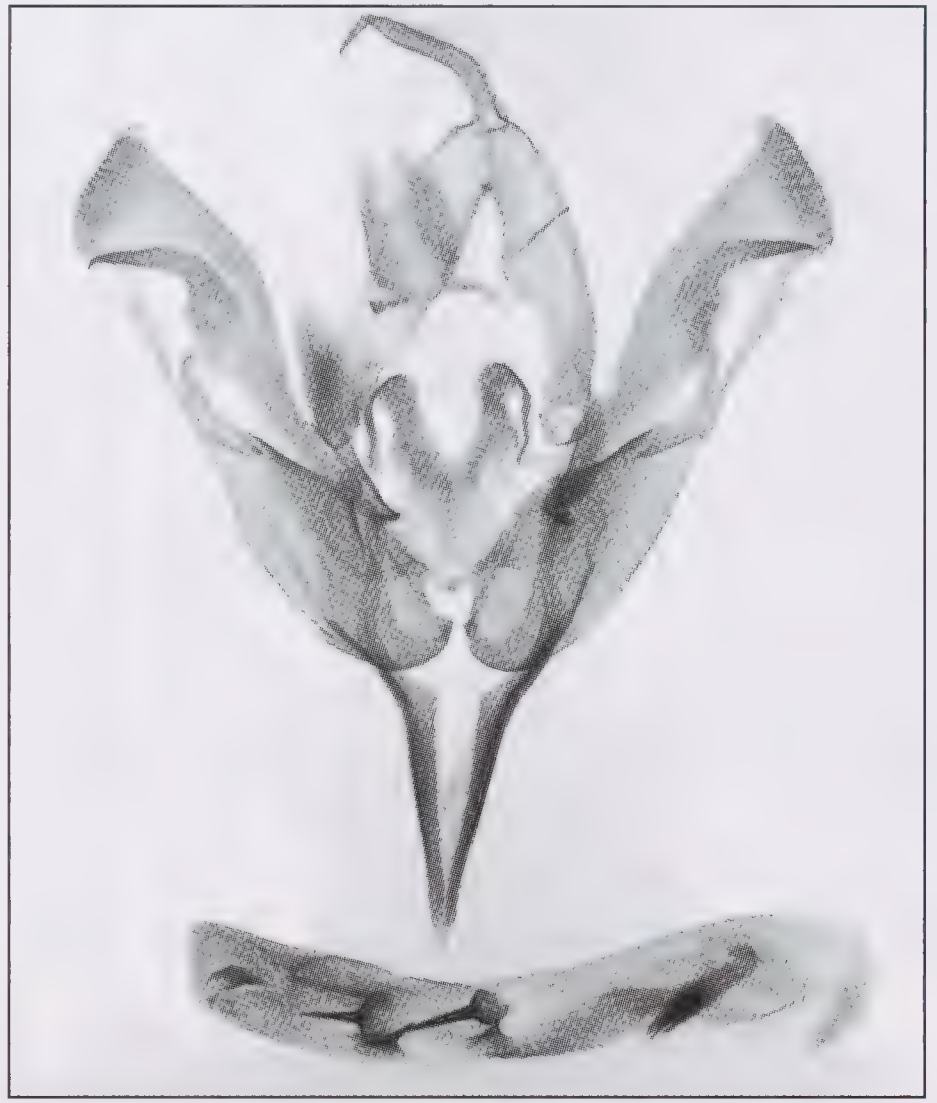

Plate 9. *Egira anatolica*, male genitalia, Jelasnicka Klisura, 8.iv.2014.

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Record of a larva of the Scarce Bordered Straw *Helicoverpa armigera* (Hb.) (Lep.: Noctuidae) in the wild

The larva of the Scarce Bordered Straw *Helicoverpa armigera* (Hübner) has rarely been found in the wild. The records are listed by Parsons, M.S. & Davey, P. (2007. *Entomologist's Record* **119**: 185-192). They are from: Red Geranium *Pelargonium sp*. on the Isle of Wight, Tree Mallow *Lavatera arborea* in Cornwall and in Devon I have found one on the seeds of Yellow Rattle *Rhinanthus minor*, several together on the seeds of *Antirrhinums* and one on a flower of Devils's Bit scabious *Succisa pratensis*.

I can now add a further record. That is a larva which was undoubtedly *H. armigera* which I found crawling up the wall of a house in the centre of Newton Abbot, South Devon (VC 3) on 19 August 2008. There was only one plant in the vicinity which was Mexican Fleabane *Erigeron karvinskianus*. It was growing in a small gap between the pavement and the house wall. In captivity the larva did feed on a flower of that plant, but died a few days later.

I have checked immigration reports published in this journal for the years from 2007 to 2011 since the publication of the paper cited above; these contain no further reports of wild larvae. However, all those years with the exception of 2007, do record imported larvae. My larval record from 19 August 2008 is listed, but not the circumstances of its discovery, so it would have been unclear to readers whether it was a wild or imported larva.

BARRY HENWOOD

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Batesian mimicry in *Anarta myrtilli* (L.) (Lep.: Noctuidae)?

On 29 June 2014, I was collecting with my father on an area of heathland near the Flanders Moss National Nature Reserve, to the west of Stirling in Scotland. The day was predominantly rather cloudy and although several *Coenonympha tullia* were on the wing during sunny intervals, diurnal Lepidoptera were few and far between. It was during one of these spells of sunshine that I spotted what I initially thought was a species of bee, flying quickly between the flowers of the heather *Calluna* spp. However, I felt there was something slightly unusual about this insect, vaguely reminiscent of the day-flying Sphingidae I have seen in abundance in the Mediterranean. It was not until I managed to net it that I realised my mistake and identified it as the moth *Anarta myrtilli*. An error in identification at ordinal level is not something one should be proud of, but my feeling of silliness was slightly lessened by my father remarking "*Are you sure that's not a bee?*" Clearly, it was convincing in its similarity.

Having since considered this in more detail, I have come to the conclusion that there are in fact some areas of striking similarity between an individual *A. myrtilli* at flight and a large species of stinging Hymenoptera, such as a bee or wasp. The mode of flight is perhaps the characteristic which renders the greatest similarity. The moth has a sort of wobbly, zigzag flight where it appears to home in on target flowers, gradually reducing the width of the 'wobble' in its flight as it approaches, before slowing down, feeding and then moving off quickly to another flower. This is very similar indeed to the slow and equally wobbling flight of, for example, common *Bombus* spp. Furthermore, *A. myrtilli* appears to beat its wings with a bee-like rapidity, which acts to make its true morphology difficult to discern on the wing and has the effect of producing an apparent contrasting black/pale colouration.

These features seem to have combined to produce a sufficient resemblance to a species of bee or wasp that both my father and myself could have been fooled, albeit temporarily, despite us both having varying degrees of entomological experience. We are led, then, to ask whether this similarity is a simple coincidence, and that perhaps others would not even have seen it, or an actual incidence of Batesian mimicry, where an otherwise harmless species mimics a harmful or distasteful one to deter predators (in this instance, most likely birds). I think it is possible that both of these are to some extent true. It is easy to imagine an initial, passing and coincidental resemblance being amplified over time by the action of natural selection to confer greater protection. But is the guise sufficient to fool a potential predator? The fact that both of us were taken in by it makes me think this likely, and it must be borne in mind that protective resemblances need not be perfect - a passing similarity which disguises the moth's true identity even one instance in a hundred would still be subject to a significant selective pressure.

The possibility that the various characteristics described here are an actual instance of mimicry seems to me to be a very real one and, were this the case, it would mean that this species possessed three distinct lines of defensive colouration and behaviour;

it only flies during periods of sunshine and therefore its anterior wings are cryptically coloured in dull, earthy red-browns for when it must lie at rest among the heather; the posterior wings are coloured bright yellow and black and can be concealed while at rest and suddenly exposed if threatened, to startle a predator before the moth attempts to escape (so called 'flash colouration'); and, in its appearance and manner of flight it mimics a bee or wasp to deter potential predators while feeding and flying. I have hitherto not encountered any other members of the genus *Anarta* and it would be interesting to find out if these species were similarly deceptive, as they are also day-flying and this mimicry, if it is indeed that, would be necessarily restricted to such insects. I would be most interested to hear if others had also been deceived at some point by this species, initially mistaking it for a bee or wasp.

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Graham Howarth

Older readers, in particular, will be saddened to hear that Graham Howarth passed away on 8 April 2015 at the age of 99 years. I have not been able to determine the number of years that he has taken this journal, but have been informed most reliably that he had completed 84 years as a member of the British Entomological and Natural History Society (formerly "the South London") and has been honoured as a Fellow of the Royal Entomological Society for no less than 76 years. We understand that an obituary will be published within the pages of the *British Journal of Entomology & Natural History* and we commend our subscribers to that publication.

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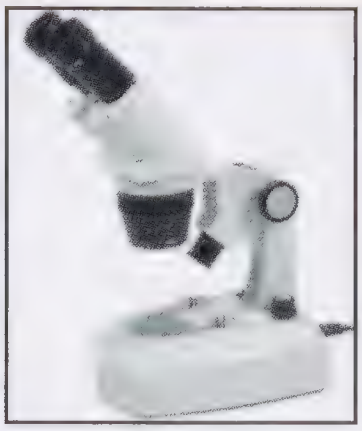

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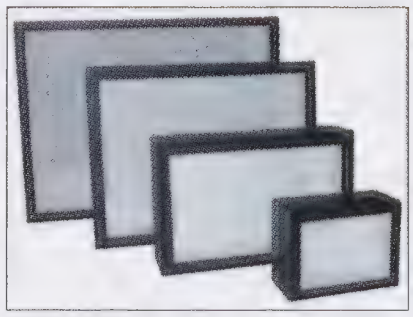

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The Entomologist's record is now printed in full colour, enabling us to accept a wider range of illustrative and interpretative material. This development has been made possible by a generous bequest by the late Andy Callow.

Front cover image of *D. aprilina* Marshalls Heath Herts 20 October 2008. © John B. Murray

RECENT ADDITIONS TO THE MOTH FAUNA OF HERTFORDSHIRE

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Abstract

A review of the moths of the English county of Hertfordshire was published in 2008 and included all available data to the end of 2006. This present paper summarises additions to the county fauna since that work. Four moth species whose presence on the Hertfordshire list was unconfirmed are here confirmed. Sixteen species thought to have been extinct in the county have been rediscovered. Twenty-eight species completely new to the county fauna are also listed. The Hertfordshire moth fauna now stands at 1575 species at June 2015. The number regarded as locally extinct falls to 141 so that the number of species *currently* present in the county is, therefore, 1434.

Keywords. Moths, Hertfordshire, distribution, new county records.

Introduction

During 2008, the Hertfordshire Natural History Society published a work on the moths of that county (Plant, 2008). The species inventory included all available records from all time to the end of year 2006 and involved 1548 taxa, representing 62% of the British Isles moth fauna at that date. The recorded species affected 58 families – 42 of micro moths and 18 of macros. Only the Limacodidae, Douglasiidae, Heliodinidae and Endromidae, as understood at that date, were not represented in the Hertfordshire county fauna.

Since publication of that work, the members of the Hertfordshire Moth Group have continued moth recording within the county. In particular, we have continued to monitor the nature reserves managed by the Herts. and Middlesex Wildlife Trust who, with commendable foresight, gave blanket permission to members of the Herts Moth Group to undertake recording work, including necessary collecting. As a consequence, a wealth of significant new data is now available. These data include the rediscovery of species treated as absent in the earlier survey; some of these were doubtless overlooked, but others may have genuinely recolonised the county. Several new species, never before recorded in Hertfordshire, have also been encountered. Other species that were rare have become more widespread and common, whilst others appear to have declined or, in some cases, become locally extinct. We have also gained a mass of information on larval foodplants, phenology and many other aspects of moth ecology. This present paper confines itself to new species added to the county fauna since the end of 2006, including some that were only doubtfully recorded in the earlier work and others that are now "resurrected" from the "probably extinct" category. Other important aspects may be presented in a separate paper at a later date.

Species now confirmed as Hertfordshire moths

***Phalonidia manniana* Fischer von Röeslerstamm, 1839**

The definition of *Phalonidia udana* (Guenée, 1845) as a full species (see Mutanen *et al.*, 2012) invalidates all past records of *P. manniana* until such time as voucher specimens can be examined. Separation of the two taxa was dealt with by Agassiz (2013). Re-examination of specimens in my own collection confirms the presence of *manniana* at Sawbridgeworth Marsh and Rye Meads – both wetland sites in the River Lea valley. Moths from Lemsford Springs and Panshanger Park, included in the map in Plant (2008) as well as material from several other sites collected since the end of 2006 and so not included in that work have yet to be located and examined. Consequently, the validity of *P. manniana* as a Hertfordshire moth is confirmed; at present there are no records of *P. udana*.

***Aethes francillana* (Fabricius, 1794)**

Records from Royston in 1926 (Fryer) and Harpenden, probably in the 1930s (C. B. Williams) were treated as unconfirmed by me in Plant (2008). It is therefore pleasing to report an example taken at Aldbury, 4.viii.2010 (Gavin Boyd) thus adding this species to the county list.

***Pandemis cinnamomeana* (Treitschke, 1830)**

Only a single, unconfirmed record of this species was available at the time of publication of the county list (Plant, 2008). Since then, one additional record from 2006 or earlier has surfaced – embarrassingly, one of my own specimens, a male which I collected in Ravensdell Wood on 31.v.2003 and lost in a box for several years. Since then, several new localities are reported – Hemel Hempstead (Roger Prue) and Aldbury (Gavin Broad) in 2010, Whippendell Wood, Watford (Andy King) and Hemel Hempstead (Roger Prue) in 2011, Broxbourne Woods (Andy King) in 2013 and Peters Green (Matt Best) and Bovingdon Brickworks (Ben Sale) in 2014. Other than at the Broxbourne Woods National Nature Reserve, all of these new records lie in the west of the county and this, together with a knowledge of the intense level of recording that took place county-wide in the years from 2000 to 2006, suggests strongly that this species has colonised us from the west since the end of 2006 rather than having been overlooked in the past.

***Acleris comariana* (Lienig & Zeller, 1846)**

The discovery in the original work (Plant, 2008) that this species was absent from Hertfordshire came as a surprise, but since I had insisted, in every case, of a genitalia dissection to separate the species from *A. laterana* I can be absolutely confident that this was indeed the case. Since the end of 2006 we have found this species in the county but only at three localities on a total of five occasions: Bricketwood, 5.vi. 2008 and 17.vi.2009 (Henry Ellis), Ellenbrook, 8.ix.2009 and 11.ix.2009 (A. Bristow) and Braughing, 19.vi.2012 (Ben Sale).

Species formerly present but treated as "probably extinct" in the county at the end of 2006 and now re-found

***Stigmella filipendulae* (Wocke, 1871)**

Previously known in Hertfordshire only from a pre-1976 map dot in volume 1 of *The Moths and Butterflies of Great Britain and Ireland*, the source of which could not be traced. However, on 24 & 26.vii.2011, John Chainey and Jenny Spence found larval mines in Dropwort *Filipendula vulgaris* affecting three adjacent map tetrads on Therfield Heath (in spite of its name, a chalk grassland site) in the north-east of the county.

***Bucculatrix frangutella* (Goeze, 1783)**

Previously not recorded in the county since the year 1890, when it was noted at Sandridge, I considered this to be "overlooked" in Hertfordshire. It was pleasing, therefore, to learn that it

is, currently, locally common on the chalk in the north-east of the county at Therfield, Royston, the Weston Hills and elsewhere in that area, with records from 2011 to 2014 inclusive.

***Coleophora potentillae* Elisha, 1885**

We had recorded this species as recently as 1990 in Hertfordshire, but in spite of some significant searching for *Coleophora* cases of all species during the 2000 – 2006 fieldwork for the county moth book, we had not seen it since then. It is probably not surprising, therefore, that larval cases on *Potentilla* were recorded at Broxbourne Wood, a former locality for the species, during September 2009 (Raymond Uffen). It is probably much more widespread at low density.

***Gelchia nigra* (Haworth, 1828)**

Our only previous report is from the Sandridge area prior to 1890 (Griffth). On the night of 21 August 2013 we recorded our second example, at a garden m.v. trap in Stevenage (Ben Sale).

***Acleris shepherdana* (Stephens, 1852)**

Our only previous record of this moth was from near Hitchin in 1883; this is the "Herts" record listed in Meyrick's "*Revised Handbook*". It was genuinely felt that this species was lost from the county, and so it was of some surprise to learn that Graeme Smith had captured two males and one female amongst the presumed foodplant (*Filipendula ulmaria*) at Pishiobury Park, near Sawbridgeworth, on 8.viii.2013; the identification was confirmed by genitalia examination. The following year, Graeme found more in the same place, on 31.vii.2014, indicating that it is resident in this part of the Stort Valley. It seems probable, therefore, that other parts of the Stort Valley and perhaps the Lea Valley might also support it.

***Endothenia quadrimaculana* (Haworth, 1811)**

An example of this species was taken at light at Rye Meads RSPB reserve, on 25.vii.2008 (Joan Childs). Previously, the species was known in the county only from two examples at Borehamwood in 1968, by Eric Bradford. As these are the only reports, it seems most likely that they relate to wandering adults. The larvae mine the stems and roots of Marsh Woundwort *Stachys palustris*.

***Ancylis diminutana* (Haworth, 1811)**

As was the case with *Gelechia nigra*, above, our only previous report of this Sallow *Salix*-feeding moth is from the Sandridge area prior to 1890 (Griffith). During 2014, two were recorded at Broxbourne Wood, on 17.v.2014 and 7.vi.2014 (Graeme Smith & Steve Easby).

***Pammene ochsenheimeriana* (Lienig & Zeller, 1846)**

A male taken at light in the northern part of Bishop's Stortford on 9.v.2011 by James Fish and Julian Reeves in the shared trap within their adjoining gardens was named from genitalia examination by Rachel Terry and represents the only record since one at Waltham Cross given in Boyd (1901).

***Cydia strobilella* (Linnaeus, 1758)**

Until now, our only county record was from Hertford in the year 1899, and in the county moth book (Plant, 2008) I commented that "*... the absence of Spruce plantations in the county suggests that the moth is unlikely still to be present here*". I will leave it to the reader to decide if this was a statement of opinion or a challenge, but on 16.iv.2013 several adults emerged from Spruce *Picea abies* cones collected during the winter at Marshall's Heath by John Murray. Spruce

is a scarce tree in the county, but wherever there is a single such tree it is quite likely to be worth the effort of collecting a bag of fallen cones in January/February and waiting to see what emerges a few weeks later.

***Ebulea crocealis* (Hübner, 1796)**

This species has appeared recently at four localities that are so spaced that they effectively represent the four corners of the county! These are Chorleywood in 2010 (Richard Ellis), Blagrove Common in 2012 (John Chainey & Jenny Spence), Broxbourne Wood in 2013 (C. W. Plant) and Hexton Chalk Pit in 2014 (Ben Sale). Prior to this we had only old reports from Hertford in 1834 (J. F. Stephens), Sandridge in 1890 (A. F. Griffith) and Cheshunt in 1900 (W. C. Boyd) and more recently Northaw Great Wood in 1966 (Barry Goater) and Broxbourne Wood in 1989 (C. W. Plant). The level of past light trapping in suitable localities suggests that the moth was either absent, or persisted at extremely low density prior to the recent spate of reports.

***Anania fuscalis* (Denis & Schiffermüller, 1775)**

One example was taken at m.v. light at Hexton Chalk Pit on, 13.iii.2015 (Ben Sale). The only previous Hertfordshire record is based upon the illustration, labelled "Hertford", in J. F. Stephens *Illustrations of British Entomology* **4**: 56, published in 1834. Apparently, up to year 2012, the adjacent county of Buckinghamshire registered 102 reports, involving 599 individuals (Andy King, pers, comm.) and so we may simply be at the limit of this species' geographical range (the last vestiges of Chiltern Chalk fade away in the west and north-west of Hertfordshire). It is of interest that most text books and web sites refer to *A. fuscalis* as a moth of marshy and damp areas and grassland. Hexton Chalk Pit is a calcareous grassland site as are several of the Buckinghamshire locations. Closer examination suggests that many "sources" may have copied the same habitat information from earlier works, with this, perhaps, deriving ultimately from a single source that is not so much un-credited as unknown to the final authors! There is clearly need for first hand observation and original reporting so that the true habitat requirements of this species might be fully understood.

***Eupithecia trisignaria* (Herrich-Schäffer, 1848)**

Our only verified county record was of larvae on *Angelica* at Brocket Hall, prior to 1890, and so the discovery of larvae on *Angelica sylvestris* at Scales Park, near the Essex border, on 28.ix.2012 by John Chainey and Jenny Spence was welcome news indeed. The species is probably still to be found at further localities, but nevertheless probably is a rare species with us.

***Cleorodes lichenaria* (Hufngel, 1767)**

This is, essentially, a species of the West Country, Wales, Ireland and Scotland, with a few isolated places along the eastern section of the south coast (Hill et al., 2010) and there are no Hertfordshire records since before the publication of the 1937 county list. It was a complete surprise, therefore, to hear of the capture of a male in a light trap at Kensworth, on 5.vi.2014 by Peter Collins. The correct identification was verified by myself from an excellent photograph.

***Meganola albula* (Denis & Schiffermüller, 1775)**

Formerly an immigrant to Britain from Europe, it has been resident in some southern coastal counties for several years. Recently there are signs that this area of residency is expanding, but this does not yet include Hertfordshire. Our only earlier record, from Arkley in 1954, was undoubtedly of an immigrant example, but a flurry of records all across the county (Little Hadham, Harpenden, Bishop's Stortford – two localities, Hemel Hempstead, Totteridge, Hatfield

and Braughing Friars), from 2010 to 2014 might equally be sourced from the southern counties as from mainland Europe. Either way, these are visitors from outside, but this is a species that could, potentially, become resident in Hertfordshire in the relatively near future.

***Agrotis cinerea* (Denis & Schiffermüller, 1775)**

The decline of this moth in Hertfordshire pretty much parallels the decline of our chalk grassland habitat and its welcome return, after the last report in 1982, follows equally the reinstatement of many such habitat areas. It is now present in the areas around Aldbury, Long Marston and Berkhamsted where it is again resident and there is a perplexing record of a singleton at Ware on 29.viii.2013 (Liz Goodyear) which must surely simply represent a wanderer? This is a species that might usefully be used by conservation managers as an indicator of habitat quality for chalk grassland.

***Orthosia opima* (Hübner, 1809)**

The species was last seen in the county at Therfield Heath (= Royston Heath), a chalk grassland in the north-east, in 1985 and it had become something of a personal quest (some might say obsession) to re-find the moth at this locality. Numerous trips in most years from 2000 to 2013 failed to find the moth here, either in light traps or at rest on the vegetation. It was enormously gratifying, therefore, to finally attract one male and one female to an 8-watt actinic light on the Heath on 8.iv.2014, with a second female found by torchlight at rest on a grass stem. The following night, 9.iv.2014, Phil Jenner, who was with me on the Heath, caught a further male in a garden in Royston town (on the Hertfordshire side of the main road), slightly further to the east. On 10.iv.2014 a further two were recorded on Therfield Heath. Presumably, this species must have been here all along at such a low population density that I was unable to detect it?

Moth species new to Hertfordshire since 2006

***Ectoedemia hannoverella* (Glitz, 1872)**

The fairly distinctive leaf mines of this species were encountered in an unspecified hybrid of Black Poplar *Populus nigra* at Ashwell Chalk Quarry Nature Reserve, on 22.x.2011 by John Chainey and Jenny Spence. Although it is not possible to say that this is certainly a new species to the Hertfordshire fauna, I can report that in spite of the *significant* emphasis placed on leaf-mine recording in the period from 2000 to 2006, this species was not encountered. Of course, it is not unusual for there to be huge year-to-year fluctuations in the numbers of mines made by some species; *E. hannoverella* may have persisted for many years at an extremely low population density in Hertfordshire, but the favoured view is that it was absent and has colonised (or recolonised) from adjacent Bedfordshire.

***Ectoedemia agrimoniae* (Frey, 1858)**

Mines of this small moth were noted on leaves of *Agrimonia eupatoria* at Waterford Heath on 3.xi.2013, by John Chainey and Jenny Spence. The moth is evidently well-established as the mined leaves are present across two map tetrads. Subsequent sightings were made of mines at the same locality in October 2014. It seems likely, on the balance of probabilities, that this is a species that has been overlooked in earlier surveys. Three other nepticulid moths as well as one agromyzid fly (Dip.: Agromyzidae) and one sawfly (Sym.: Tenthredinidae) are known to mine the leaves of *Agrimonia eupatoria* in Britain and so care must always be taken before hastily applying names. The web site at *www.leafmines.co.uk* is invaluable in separating the various mining species.

***Adela croesella* (Scopoli, 1763)**

Although not reported at all up to the end of 2006, the period covered by the "Herts Moth Book", nor in the ensuing four years, this moth made quite unexpected simultaneous appearances in central Hertfordshire at Bramfield (Andrew Wood) and in the north-east of the county at Braughing Friars (Ben Sale), on 25.v.2011 – both observers keenly claiming the first county record! Further reports in 2012, 2013 and 2014 suggest that the moth is currently well-established in the north-east of the county, both on the chalk and where the Glacial Boulder Clay exerts a calcareous influence, with reliable reports from Lower Green, Reed, Brickhill Grove, Ashwell, the Weston Hills and Sheepwash Grove, mostly due to the efforts of John Chainey and Jenny Spence. All reports relate to adult moths, with records spanning the period from 26 May to 9 June. The favoured larval foodplants are said to be Wild Privet *Ligustrum vulgare* and Sea Buckthorn *Hippophae rhamnoides* (Heath & Pelham-Clinton, 1976); the former is widespread in the county (James, 2009).

***Psychoides filicivora* (Meyrick, 1937)**

There is a significant difference between the essentially south-western and western distribution of this moth given by Pelham-Clinton (1985) and the rather more widespread pattern that can be seen at *www.mothscount.org/uploads/0200.pdf* (accessed 1 June 2015). The arrival of *filicivora* in Hertfordshire in 2011 at Watford (Andrew King) and further sightings at Hertford in 2012 (Andrew Wood) then Hatfield (Stephen waters) and Hemel Hempstead (Roger Prue) in 2014 is likely to be a part of this general increase in range. The very similar *Psychoides verhuella* Bruand, 1853 has also spread and in a similar manner, from a single locality in the year 2006 to six Hertfordshire localities at the end of December 2014, with records affecting the years 2011 to 2014 only.

***Bucculatrix chrysanthemella* (Rebel, 1896)**

The first British example of this species was an adult male, recognised by Rachel Terry (and subsequently confirmed by Dr Zdeno Tokar), as she worked through the 2009 batch of micros collected in Bishop's Stortford by James Fish and Julian Reeves (Terry, 2012). It was caught in a garden light trap on 19.vi.2009. The larvae mine the leaves of Marguerite Daisy *Argyranthemum frutescens* which is widely sold at garden centres, usually during the month of May. I have searched the plants at the nearest garden centre to the capture site, a distance of only about a kilometre away, every year from 2010 to 2015 to the great consternation of the staff there, but so far failed to find any mines at all.

***Phyllocnistis xenia* Hering, 1936**

There appears to have been a rather significant expansion in the geographical range of this leaf-mining micro moth. In Hertfordshire, it first appeared in the far west of the county at Aldbury, where Gavin Broad caught adults at light on 27.vi.2011. The distinctive mines in the leaves of White Poplar *Populus alba* have been seen from 2012 to 2014 in scattered localities across the county and the moth is limited, probably, only by the scarcity of the host tree is some areas.

***Pennisetia hylaeiformis* (Laspeyres, 1901)**

The Raspberry Clearwing was famously discovered new to Britain by Jim Reid whilst pruning his raspberry canes in his garden in Meldreth, Cambridgeshire (Reid, 2008). Subsequently, the moth was found by Jim in Hertfordshire, a short hop down the A.10 road at a "pick your own" fruit farm at Puckeridge. Here, the use of artificial pheromone lures can usually be expected to attract males in large numbers (I have assembled twenty examples in two or three minutes). However, the use

of artificial pheromone lures has also shown conclusively that the species is widespread and extremely common across the whole of Hertfordshire and probably much of the rest of the south-east of England. Indeed, it is likely that it is established in almost any neglected raspberry patch where the stems and exposed roots are not tidied and burned. Perhaps unsurprisingly, most records are from domestic gardens and allotments and it is clear that the species is an overlooked, long-term resident. Regrettably, there is a lack of data relating to "wild" patches of raspberries, such as are sometimes encountered in woodlands and other areas of the countryside. Exposing pheromone lures at these places at around the end of the third week of July is likely to be rewarding.

***Prays ruficeps* (Heinemann, 1854)**

The existence of *Prays ruficeps* appears to be debatable – there simply does not appear to be any published information on the matter. Bengtsson & Johansson (2011) claim differences in larval biology, phenology and the appearance of the imagines of *P. fraxinella* and *P. ruficeps*. DNA bar coding also indicates that *P. ruficeps* is a species distinct from *P. fraxinella* (Mutanen & Huemer, unpublished). The situation is confused, however, by the existence of a dark form of *P. fraxinella* that is scarcely separable from *P. ruficeps*. Current, informal opinion is, generally, that *P. ruficeps* is uniformly dark brown/blackish with a rufous (but variably so) head; examples showing even the faintest of hint of the pattern exhibited by *P. fraxinella* are themselves *fraxinella* (form *rustica* Haworth, 1828). On this somewhat unscientific basis, both species are present in Hertfordshire, though actual distribution patterns are not known. Voucher specimens should always be retained.

***Tachystola acroxantha* (Meyrick, 1885)**

This is a highly invasive species. Originally a native of Australia it was first recorded in Britain in the West Country in 1908, probably introduced with Australian plants. It showed little signs of spreading until relatively recently and is now found up to the Scottish border. The first Hertfordshire record was from Sawbridgeworth Marsh, on 22.v.2009 (C. W. Plant). In 2013 and 2014 it appeared at a wide rangle of places across the entire county and it is evidently established here.

***Mompha terminella* (Humphreys & Westwood, 1845)**

This species presents another example of the mysterious way in which a moth that makes distinctive leaf mines in a distinctive and not uncommon woodland plant (Enchanter's Nightshade *Circaea lutiana*) can escape detection throughout a period of seven years of intensive survey in which leaf mines were specifically targeted – not to mention the previous 150 years of casual recording! Or perhaps it really has colonised the county from outside? The first record that we have for Hertfordshire is from Earl's Wood, in the far north-east of the county, on 27.ix.2012 (John Chainey & Jenny Spence). Since then we have reports from a total of six locations across the county area.

***Cnephasia pumicana* (Zeller, 1847)**

The validity of *Cnephasia pumicana* (Zeller, 1847) as a full species is reported by Langmaid & Agassiz (2012). All past records of *C. pasiuana* are thus invalidated until such time as voucher specimens can be examined. To date, I am able to confirm the presence of *pumicana* in my garden in Bishop's Stortford in the east of the county and at Ashwell Chalk Pit in the north. Interestingly, I do not appear to possess any Hertfordshire specimens of *pasiuana* although this is perhaps unsurprising since much material was salvaged from the bottom of traps, examined and then discarded. There is urgent need to examine this species pair during 2015. The adults fly from late June to early August in Hertfordshire.

***Epinotia fraternana* (Haworth, 1811)**

This most recent addition to the county fauna came in June 2015. Chris Shorthall, at Rothamsted Research in Harpenden, was called to examine damage to trees of *Abies nordmanniana* in a mixed plantation near Harpenden on 4.vi.2015. Hollowed-out needles, with an exit hole at the base, were abundant as were the adult moths – the latter identified from their genitalia by myself. The prior absence of this moth from the county list is likely to be a reflection of the scarcity of the foodplant and wherever *Abies* grows it is potentially likely that *E. fraternana* will be present.

***Tetramoera langmaidi* Plant, 2014**

This bamboo-feeding tortix was described as a species new to science from specimens taken at light traps in Hampshire and Hertfordshire. The Hertfordshire site was a garden in Bengeo (northern part of Hertford town) from which the paratype female was obtained on 24.vii.2014 (Andrew Wood, in coll. C. W. Plant) and further examples of both sexes at later dates. Full details, including illustrations of the adults and the genitalia may be found in Plant (2014).

***Grapholita lobarzewskii* (Nowicki, 1860)**

A single female, taken at m.v. light on 22.vi.2013 at a garden in Ware (Geoff Lightfoot) was identified from genitalia dissection by Steve Hind. The origin of this moth is obscure. The species was unknown in Britain until the first at Lydd, East Kent in 1957 and remained confined to Kent until 1991 when it was caught in Devon (Bob Heckford). Since then it has spread rapidly. According to the text in Bland (2014) it also affects Somerset, Dorset, Hampshire, Sussex, Surrey, Gloucestershire, Worcestershire and Montgomeryshire; the distribution map in that same work also shows Glamorgan, Warwickshire and Buckinghamshire, which are not mentioned in the text.

***Cydia amplana* (Hübner, 1799)**

The first Hertfordshire record of this not unattractive moth came from St Albans on 18.viii.2012, during the course of a public moth catching event that I was running at the Jersey Farm Woodland. The following night, 19.viii.2012, Roger Prue was surprised to discover another in his garden light trap in Hemel Hempstead. A third appeared in an actinic trap on the "living roof" on top of the extension to my house in Bishop's Stortford on 20.viii.2012, with another in a different part of that same town on 20.viii.2012 (James Fish and Julian Reeves). A fifth and final 2012 example was at Whippendell Wood, Watford on 3.ix.2012 (Andy King). The first two or three presented themselves at a time of moderately high immigrant activity and there can be no real doubt that primary immigration was the origin of all the 2012 examples. Interestingly, there were three subsequent reports of this species, all from 2014: Chorleywood on 1.viii.2014 (Richard Ellis), Stevenage on 6.viii.2014 (Ben Sale) and Amwell Gravel Pits, 16.viii.2014 (C. W. Plant). The source of these is obscure, but immigration seems the most likely explanation rather than temporary residency following the 2012 invasion.

***Agriphila latistria* (Haworth, 1811)**

A single example caught at Northaw Great Wood, in the south of the county, on 1.ix.2012 by myself and Ben Sale is preserved in my own collection. The habitat here scarcely seems suitable and one is inclined to wonder whether its occurrence might be linked to recent immigration activity – if not from overseas then perhaps from some other part of England? Interestingly, further examples were caught the following year in the far west of the county at Aldbury, with singles on each of 11.viii. and 12.viii.2013 (Gavin Broad).

***Cydalima perspectalis* (Walker, 1859)**

This native of China, Korea and Japan was first recorded in Britain from Surrey in 2008 (Mitchell, 2009). It has evidently spread and was first recorded in Hertfordshire on 8.viii.2010

in a garden light trap in Bishop's Stortford (Fish & Reeves, 2010 – who provide an interesting summary and correct some minor published errors). Subsequently, larvae were found on Box *Buxus sempervirens* hedges at Gilstone Park, near Harlow but on the Hertfordshire side of the border, on 24.v.2011 by Andrew Salisbury. More recently, Jono Forgham caught an adult in his garden at Westland Green, a village to the west of Bishop's Stortford, on 6.viii.2014. It seems possible that the moth might be established in the eastern part of Hertfordshire and searches for larvae on Box bushes are encouraged; any discoveries of this potential pest species should be reported via myself, as the County Moth Recorder, in the first instance.

***Nebula salicata* (Hübner, 1799)**

In the third edition of his standard identification work on British moths, Skinner (2009) lists this primarily northern species from "*Patmore Heath, Hertfordshire, on 7.vii.2007*". Bernard Skinner informs me that the captor was Gavin Vicary. Unfortunately there is no voucher specimen, and Gavin cannot recall catching this moth. The record is retained for now, but clearly needs investigation.

***Eilema caniola* (Hübner, 1808)**

In recent years there has been a significant expansion in the range of this species which has, traditionally, had its roots in the south-west of England and the south-west of Wales (see distribution map, now significantly out of date, in de Worms, 1979). Richard Ellis can lay claim to the first Hertfordshire record. His initial capture at his garden light trap in Chorleywood came in 2010, but I cannot claim this for Hertfordshire as his garden is a few metres into Buckinghamshire. However, two years later, in 2012 the species had clearly become established there with adults attracted to the light from 25 July to 7 September in that year – it is utterly inconceivable that some of these moths did not fly to the Hertfordshire side of the boundary line! This incursion to the west of the county was followed by scattered records all the way to the eastern boundary with Essex during 2014. At the time of writing in early June 2015 it is about 6 to 8 weeks too early to know if the species has become established, although I expect this to be the case, if not this year then over then next few. My own experience of the moth *in Britain* is limited, but *in Europe* it is extensive and from the latter I would highlight the fact that variation in overall appearance of the adults of *E. caniola* and *E. complana* means that there is a significant scope for misidentification by the unwary. Happily, males of the two may be separated with ease by examining the uncus of the genitalia in lateral view (possible, with experience, on living moths).

***Hyphantria cunea* (Drury, 1773)**

The Autumn Webworm was recorded as a species new to Britain from a male example taken at light in Stevenage, on 29.ix.2014 by Ben Sale (Sale, 2014). The origins of this moth are unclear, though it is present in Europe. There is a currently unpublished report of another example of the same species from Trumpington in Cambridgeshire in May 2014, but the full details are not immediately available.

***Euplagia quadripunctaria* (Poda, 1761)**

The spread of this large and brightly coloured moth into the south-east of England is now very widely known (if somewhat poorly documented for posterity). Few examples are likely to pass un-noticed as they feast at the flowers of *Buddleia* in domestic gardens and thanks to the wonders of the Internet it is now not difficult for observers to find a local moth group that is keen to be informed of "their" moths. In Hertfordshire we have turned this to advantage, treating the arrival

of the moth as an enormous opportunity for positive publicity for both the county moth group and the moths themselves. The first Hertfordshire record was made at Croxley Green, in the west of the county, on 13.viii.2009 by Colin Grant, followed the next day, 14.viii.2009, by another at Ware, in the east, by Liz Goodyear. Oddly, there was only a single record the next year, from Cheshunt in the south-east on 30.vii.2010 and none at all reported for 2011. However, in 2012 I received reports from all across the southern two-thirds of the county, from North London northwards to Kensworth (in the west) and Bishop's Stortford (in the east) and it is probable that the moth is now established across most of this area. The main body of reports fall between 25 July and 28 August, though with the bulk coming in the second and third weeks of August; extreme dates are 19 July at Kensworth and 27 September at St Albans. Research into this species has also revealed a previously overlooked record from Stevenage in 1934 (C. H. Tindall-Lucas) and given the easily recognised form of this moth the record is presumed to be correct.

***Callimorpha dominula* (Linnaeus, 1758)**

This is another extremely distinctive moth and one that could not be misidentified by anyone with even the most basic of observation skills. It is interesting, therefore, that as with the previous species, research into the current spread has also thrown up a previously overlooked report, of one from Ickleford, near Hitchin, probably in 1912. Modern records affect the years 2010 to 2014 and there are six reports as follows: Letchworth, 22.vi.2010, at m.v. light around 22.30 hours (Randy Drew – reported in Plant, 2010); Norcott Hill, 24.vi.2011, dead on the road (Dave Turnbull); Hemel Hempstead, 21.vi.2014, light trapping (David Kirk); Hemel Hempstead area, 27.vi.2011, a worn example (David Kirk); Bovingdon Brickworks, 11.vii.2014, light trapping (Ben Sale); and Hemel Hempstead, 16.vii.2014, light trapping (Roger Prue). In spite of their distinctive form and colour, larvae have not yet been found in the county, although the expected foodplants (Comfrey *Symphytum* spp. and Green Alkanet *Pentaglottis sempervirens*), are widely available. It is of interest to note that a further example was found on the outside of a garden m.v. trap in western London at Wembley, on 2.vii.2011 (Geoff Geiger) – the first ever Middlesex (VC 21) record.

***Agrotis crassa* (Hübner, 1803)**

The arrival of a male Great Dart at his garden light trap in Bishop's Stortford on 13 August 2014 was a most pleasant surprise for its captor, Graeme Smith. It is assumed that the moth was a primary immigrant.

***Xestia agathina* (Duponchel, 1827)**

A worn example of the Heath Rustic presented itself in Geoff Senior's light trap in his garden at Little Hadham, on 11.ix.2012 and is the only Hertfordshire record. The presence of this species in the county is surprising and this individual must surely have been plucked from its natal area by the wind and carried some significant distance?

***Mythimna l-album* (Linnaeus, 1767)**

A single example in my own garden light trap in Bishop's Stortford town on 30.vi.2009 is apparently the only valid Hertfordshire record; given the distinctive appearance of the moth it is not likely that any have passed unreported. Primary immigration is presumed to be the source.

***Proxenus hospes* (Freyer, 1831)**

A record from Richard Ellis' garden in Chorleywood is technically in Buckinghamshire, though it is nice to suppose that the moth flew across Hertfordshire airspace to reach him on 2.ix.2008. On the other hand we can indeed lay claim to a second example on 6.ix.2012 in a garden at

Newmarket Road in Royston (Phil Jenner); the garden is on the south side of the road and hence in Hertfordshire (those on the other side are in Cambridgeshire!). The species is a rare primary immigrant to the British Isles, having first been recorded here in Cornwall during 1978.

***Eublemma parva* (Hübner, 1808)**

An adult Small Marbled in a light trap in Bishop's Stortford on 29.vii.2008 (James Fish & Julian Reeves) was a surprising addition to the county fauna and presumably a primary immigrant. Additional records were forthcoming at Braughing Friars on 27.vi.2011 and 10.vii.2011 (Ben sale), but there have been none since then.

***Acontia lucida* (Hufnagel, 1766)**

There is a single Hertfordshire record of this primary immigrant species, from Kensworth, 19.viii.2012 (Pete Collins). There are no other records for the county.

Some problems yet to be resolved

***Cnephasia pasiuana* (Hübner, 1799)**

The validity of *Cnephasia pumicana* (Zeller, 1847) as a full species (Langmaid & Agassiz, 2012) has invalidated all past records of *C. pasiuana* until such time as voucher specimens can be examined. Material so far examined belongs to *pumicana* (see above). Not all specimens were kept; many would have been named as "*pasiuana*" by examining the genitalia of males and then discarded. Consequently, at the start of June 2015, the presence of *C. pasiuana* on the Hertfordshire list requires confirmation.

***Euxoa tritici* agg.**

The White-line Dart has been the subject of much recent taxonomic debate and yet comparatively little scientific study! There is a more or less general agreement that "*tritici*" is a complex of more than one species, but opinions vary on how many. Clancy *et al* (2012) claims three stating that two (*eruta* and *tritici* sensu stricto) are present in Britain with the third (*nigrofusca*) apparently unrecorded here. This may well be correct, but there is little in the way of published evidence. Regrettably, Clancy does not present any genitalia drawings; this is a problem because the drawings of genitalia that are available, in the third volume of *Noctuidae Europaeae* (Fibiger, 1997) are in part wrongly captioned. For the record, 25 "*eruta*" is correct, but 26 "*crypta*" is actually *tritici* and 27 "*tritici*" is in fact *nigrofusca*. Examples of Hertfordshire White-line Dart are required for detailed examination, including DNA bar-coding; the author particularly welcomes such specimens from any moth-ers who do not themselves wish to retain the specimens.

***Diachrysia chrysitis* (Linnaeus, 1758) and *D. stenochrysis* (Warren, 1913)**

Recent studies of the base-pair sequence on the CO1gene of the mitochondrial DNA indicate that both species are indeed present in Britain (Plant & Byun, in prep.), although to date there are no examples of *stenochrysis* from Hertfordshire. Separation, however, is by no means as straightforward as some identification guides would have us believe. Candidate specimens are those in which the green colour of the forewings forms an "H" shape, rather than two vertical bars **and** in which the horizontal bar has a thickness of *at least* three millimetres; these should be retained. Examples of the "H" form in which the horizontal bar of the H is thinner are always referable to f. *juncta* Tutt, 1891 (= f. *tutti* Kostrowicki, 1961) of *D. chrysitis*.

Discussion

This summary of available information lists four moth species whose presence on the Hertfordshire list was previously either doubtful or unconfirmed, along with 16 species thought to have been lost but recently rediscovered and a surprising 28 species completely new to the county fauna since the end of year 2006. For the reasons presented, *Cnephasia pasiuana* must be, at least for the time being, removed from the list. Consequently, the Hertfordshire moth fauna (species for which there is at least one valid record), has risen from 1548 at December 2006 to 1575 at June 2015. Within that list, the number of species apparently lost and presumed extinct here has fallen from 157 to 141.

No attempt is made here to analyse the data presented. However, it is worth a passing comment that a good proportion of the new species, probably the majority, are evidently completely new arrivals rather than species that have been overlooked in the past. This in turn suggests that significant changes are afoot, perhaps associated at least in part with climate change or perhaps for some other reason. Only by maintaining the recording effort into the long term future, including the laborious recording of numbers of even the commonest of species, can we hope to eventually amass sufficient information to allow some sort of sensible analysis of what is going on. I strongly urge any readers who do not already do so to ensure that at the end of every year they submit all of their data to the relevant County Moth Recorders, whether this be garden lists or notes from holidays.

No changes to the conservation status codes of Hertfordshire's moths are required as a result of this present survey. At the end of 2006, 123 species were regarded as *Priority Species* for conservation action, with a further 22 regarded as *Threatened* and another 115 that are *Rare*. These figures may be re-examined in a separate paper in due course.

Acknowledgements

This update to the county fauna is possible only because of the hard work and dedication of the volunteer members of the Herts Moth Group. Without their efforts in the field and their meticulous post-expedition reporting no data would be available. Names of people responsible for records presented here are given alongside those records. I also thank the many landowners who have granted access permission, no matter how mad they thought us to be, and in particular the Herts and Middlesex Wildlife Trust whose sensible and balanced attitude to specimen collecting on their many nature reserves has enabled moth-ing to develop as a valuable scientific exercise as well as a rewarding hobby. Finally, I thank Ben Sale, Graeme Smith, Roger Prue and Andrew Wood for reading a draft of this paper and suggesting several changes.

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Acrolepia autumnitella Curtis (Lep.: Glyphipterigidae): New to Northumberland

On 17.i.2015, Paul Drummond, the warden at Gosforth Park NR, (VC 67; O. S. grid reference NZ 259698), disturbed a micro moth which was unfamiliar to him from the woodpile he was moving. The following morning I acquired the specimen which I took home to identify; it soon became apparent that it was a specimen of *Acrolepia autumnitella*, a first record for our region. The food-plant Woody Nightshade *Solanum dulcamara* is common at this site.

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Further occurrences of *Clepsis dumicolana* (Zeller, 1847) (Lep.: Tortricidae) in Middlesex

A Robinson-pattern moth trap, with 125 watt m.v. bulb, has been operating weekly on the roof garden of industrial premises at Warple Mews, Acton (London W3) since July 2014 and more sporadically prior to that. On 5 September 2014, AC was examining the contents of the overnight trap and discovered an unfamiliar tortricoid moth. It did not appear to closely match anything in the literature available to him, so the moth was retained and in due course passed on to RT, who has been looking at 'difficult' specimens for AC over several years. On 20 October 2014, RT emailed to say that she believed that the moth was an example of *Clepsis dumicolana*, a European species that would be new to Britain. Later, RT confirmed the identification and has retained the specimen in her collection. She also noted that *C. dumicolana* had previously been discovered in Chelsea, London during May 2014 (Pires, 2014. *Entomologist's Rec. J. Var.* **126**: 121-129), a straight line distance of approximately 6.1 km (3.8 miles) from the Acton site.

A mature ornamental Ivy *Hedera helix* has been growing up the wall below the trapping location since at least 2004. A systematic search was made of this Ivy in late October, but no *dumicolana* were disturbed. However, some feeding damage was noted on Ivy leaves and this looked broadly similar to that noted in Pires (2014) as being 'probably' signs of larval feeding activity of *dumicolana*. No pupae were discovered.

Starting in early May 2015, a careful search of the Ivy was carried out by AC on each working day. There were no sightings of *C. dumicolana* that month, but at 07.30 on 3 June a stationary tortrix was noted on the ivy, just out of arms reach. Ladders were procured and voucher shots taken with a mobile phone camera, before the specimen was secured. During this process a second individual was noted, but this was disturbed during attempts at capture and it escaped.

Following the daytime observations of 3 June, a 125 watt m.v. trap was run that night, within approximately three metres (10 feet) of the Ivy bush. No *C. dumicolana* were trapped even though the conditions were calm and fairly warm. However, on 4 June, the Ivy was beaten with a long-handled net after sorting through the trap and two *dumicolana* were disturbed. One was captured, but the other concealed itself in leaf-litter and was not taken. A further four examples were netted later the same day, 4 June, flying in the daytime sunshine.

Anecdotal evidence (Fiona Barclay, personal communication) suggests that *Clepsis dumicolana* may have been around the ivy at Warple Mews in good numbers for some time, though a concrete identification was not established.

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Viper's-bugloss *Echium vulgare* and the Narrow-bordered Five-spot Burnet moth *Zygaena lonicerae* (Scheven)

For several years, I have been recording the Lepidoptera in the parish of Old Weston (O. S. grid reference TL 0977), on the western edge of Huntingdonshire (VC31). The recent occurrence of what can only be called a population explosion by the Narrow-bordered Five-spot Burnet *Zygaena lonicerae* was a significant event and is recorded below.

Prior to 2010, Narrow-bordered Five-spot Burnets were recorded regularly in small numbers, usually fewer than ten records per annum, with a maximum of three individuals at any one time. Then in 2010, there was a large increase in numbers in the parish, as well as in VC31 as a whole. In the process of searching for a Six-spot Burnet *Zygaena filipendula* (L.), I counted 87 Narrow-bordered Five-spot Burnets before I found a single Six-spot; this was by far the largest number I had ever come across. At this point I stopped counting, but there were obviously hundreds more individuals present, nearly all feeding on Viper's-bugloss. When the first Narrow-bordered Five-spot Burnets of 2011 appeared, I decided to do a transect count.

The record of Narrow-bordered Five-spot Burnet moths is presented, in Table 1.

Table 1. Actual numbers of *Zygaena lonicerae* along the transect, for each date in 2010.

Date	Number	Date	Number	Date	Number	Date	Number	Date	Number
June		June		Jun/Jul		July		July	
10	6	19	1964	27	3907	5	802	13	3
11	32	20	4586	28	814	6	286	14	12
12	65	21	3101	29	3218	7	90	15	5
13	1224	22	3645	30	1341	8	89	16	1
14	915	23	4620	1	768	9	82	17	0
15	1391	24	7389	2	1106	10	88	18	4
16	843	25	4925	3	1346	11	17	19	2
17	1347	26	7760	4	1309	12	4	20	0

The transect was 1.5 km in length and followed part of the perimeter fence around Molesworth Airbase. The width of the transect was about five metres, encompassing about one metre inside the fence which comprised gravel, across the unsealed track to the edge of the arable fields where there was an uncultivated border. The gravel inside the fence and the track just outside, along with the outer strip of the track were suitable habitats for Viper's-bugloss to grow. The distribution of Viper's-bugloss was patchy, ranging from large clumps with numerous stems to isolated individual plants with few stems. Viper's-bugloss turned out to be an ideal plant on which to count Narrow-bordered Five-spot Burnets, as each flower stem had numerous horizontal side branches with many small flowers which opened in sequence giving a prolonged

flowering season which ranged from before the first Narrow-bordered Five-spot Burnet appeared until well after the last one was recorded.

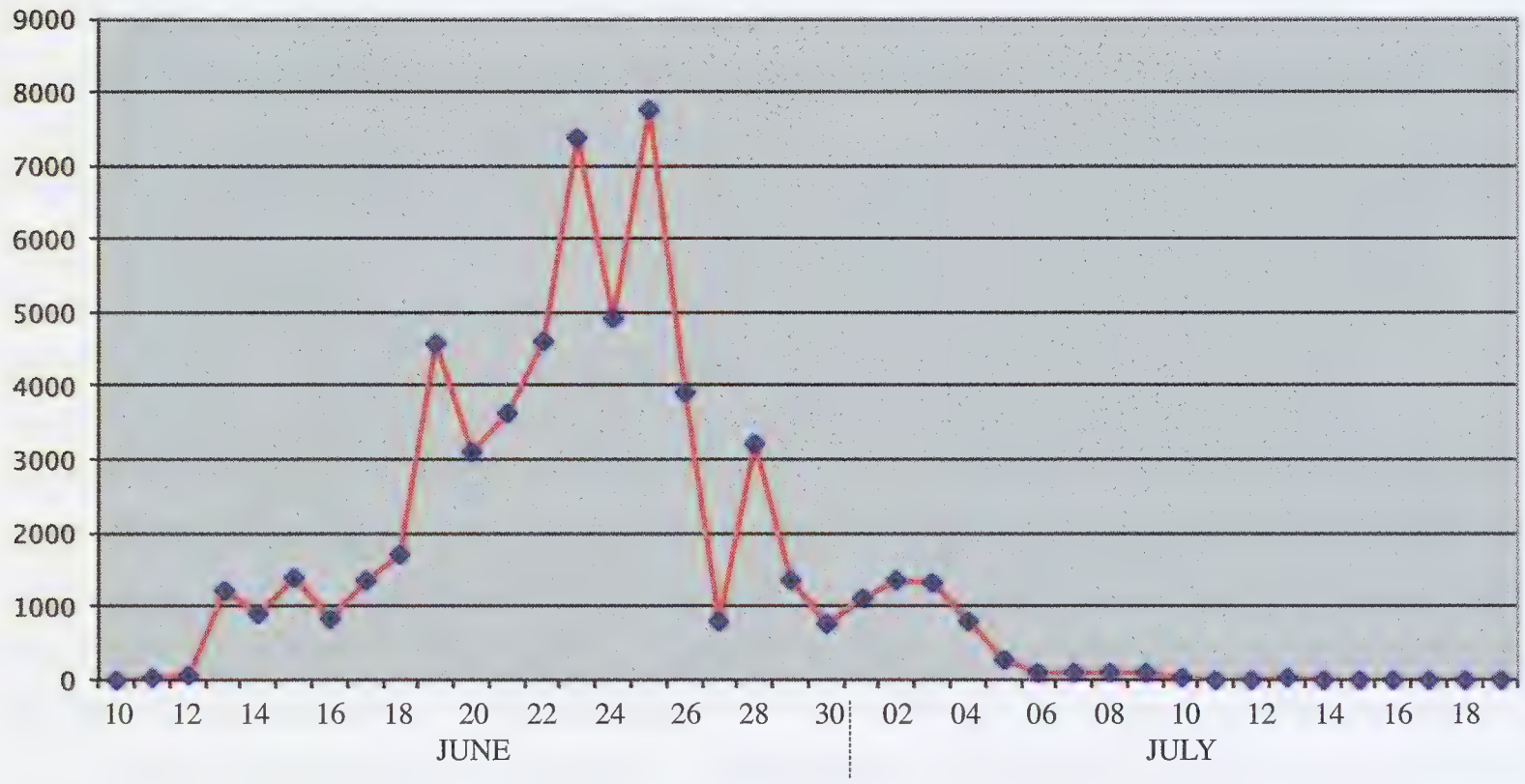

Fig. 1: Distribution by date of actual numbers of *Zygaena lonicerae* at the study site.

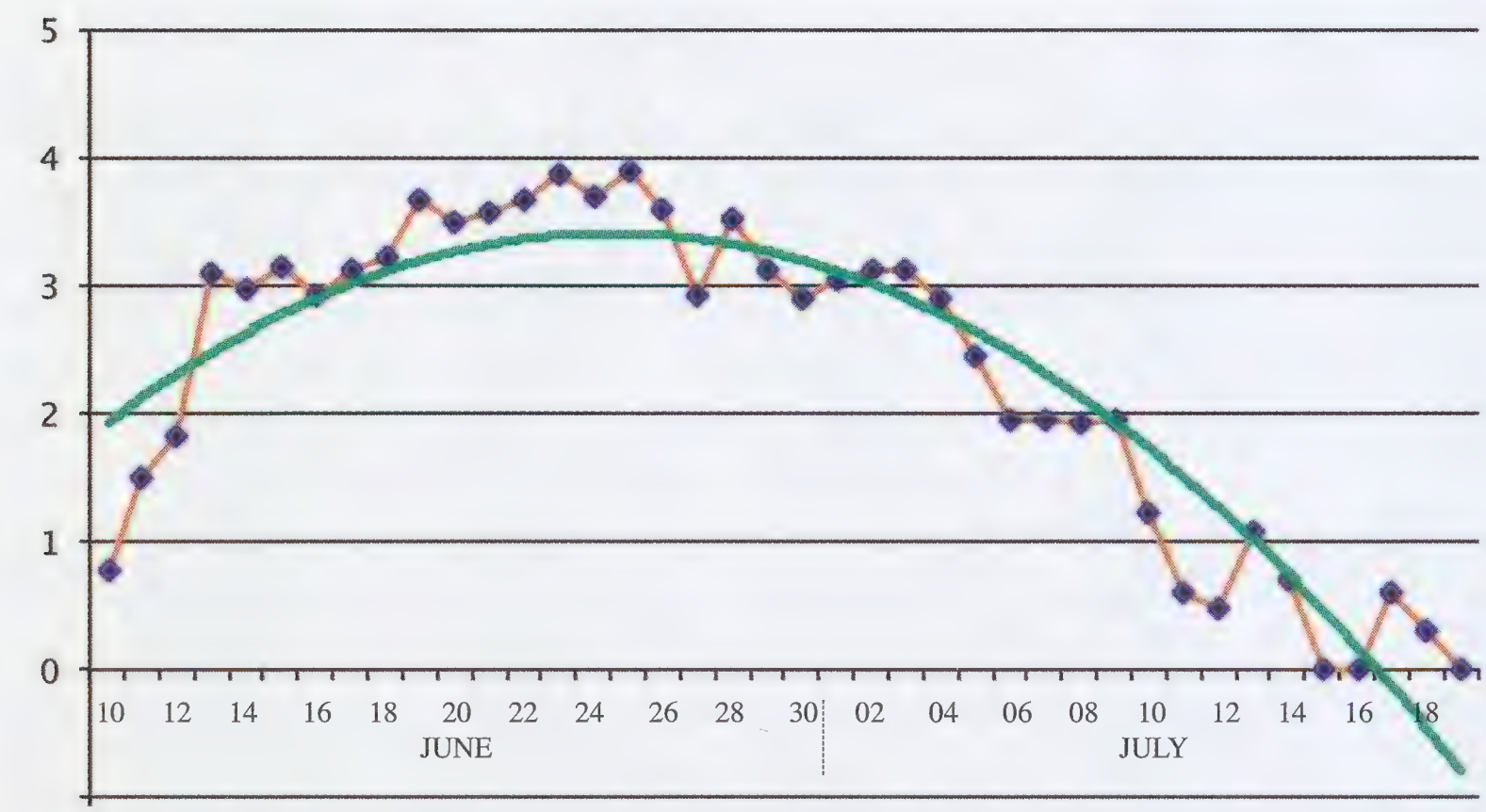

Fig. 2. Log_{10} of actual numbers plotted against date (red line), with polynomial trend line added automatically by Microsft Excel software (green line).

Another factor, which helped in counting, is that the moths were not readily disturbed and tended to be quite lethargic on the flowers. Whilst the numbers remained relatively low, it enabled me to inspect each individual for the similar Six-spot Burnet, but once the numbers went over several hundred it became unfeasible, so only those specimens which were readily seen sitting on top displaying their wings were inspected. Over the period of the recording two specimens of Six-spot Burnet were noted; it is highly likely that other individuals were present, but the species would have been present in extremely low numbers.

Table 2. Plant species on which nectaring by Narrow-bordered Five-spot Burnet was observed.

Plant Species	No. of days on which moths recorded feeding	Maximum number of moths seen
Viper's-bugloss *Echium vulgare*	38	7517
Thistle *Cirsium* spp., *Carduus* spp.	32	207
Bramble *Rubus* spp.	20	481
Rosebay Willowherb *Chamerion angustifolium*	15	16
Smooth Hawksbeard *Crepis capillaris*	4	1
Bristly Oxtongue *Picris echioides*	4	2
Field Bindweed *Convolvulus arvensis*	5	4
Yarrow *Achillea millefolium*	3	2
Black Horehound *Ballota nigra*	4	5
Common Ragwort *Senecio jacobaea*	7	11
Bird's-foot trefoil *Lotus corniculatus*	7	10
Wild Parsnip *Pastinaca sativa*	1	1
Marjoram *Origanum vulgare*	15	73

Plotting the counts gives a graph line that shows a number of apparently anomalous peaks (Fig. 1). These may be due a many factors, including weather conditions on the day in particular. However, by plotting the base $_{10}$ logarithm of the numbers, rather than the actual numbers, the graph line is smoothed; using the automatic graph function in Microsoft Excel to add a polynomial trend line now presents a graph that perhaps more faithfully reflects the true population dynamic (Fig. 2).

The first copulating pairs were recorded on 24 June and then daily until 10 July. The maximum seen was on 3 July with 16 pairings. Along with the exceptional numbers of moths seen, one thing that was noticeable was the lack of corpses. The most bodies I saw were eight on 2 July. Several individuals were found dead in spiders' webs, but most bodies were on the ground under the plants. Several bodies were taken for dissection.

Narrow-bordered Five-spot Burnets were recorded feeding on a variety of flowering plants (Table 2). The most numerous records came from Viper's-bugloss, and this plant was recorded being used as a nectar source on all but one day of the recording period. Other flowering plants were used to a greater or lesser degree, as their flowering period commenced. Four other species of plant had significant numbers of feeding Narrow-bordered Five-spot Burnets: Creeping Thistle *Cirsium arvense*,

Table 3. Maximum number, on given date, of recorded Lepidoptera species at flowers of *Echium vulgare*.

Species of Lepidoptera attracted to Viper's-bugloss	No. of Days	Maximum no. seen
Six-spot Burnet *Zygaena filipendulae* (L.)	2	1
Narrow-bordered Five-spot Burnet *Zygaena lonicerae* (Scheven)	39	7760
Pyrausta aurata (Scop.)	1	1
Small/Essex Skipper	18	273
Large Skipper *Ochlodes faunus* Turati	23	10
Brimstone *Gonepteryx rhamni* (L.)	1	1
Large White *Pieris brassicae* (L.)	4	3
Small White *Pieris rapae* (L.)	9	13
Common Blue *Polyommatus icarus* (Rott.)	1	1
Small Tortoiseshell *Aglais urticae* (L.)	7	3
Marbled White *Melanargia galathea* (L.)	1	1
Meadow Brown *Maniola jurtina* (L.)	3	2
Humming-bird Hawk-moth *Macroglossum stellatarum* (L.)	2	1
Burnet Companion *Euclidia glyphica* (L.)	1	1
Red Admiral *Vanessa atalanta* (L.)	1	1

Welted Thistle *Carduus acanthoides*, Bramble *Rubus fruticosus* agg. and Marjoram *Origanum vulgare*. When the two small patches of Marjoram started flowering (from 27 June), they acted as significant magnets for many local Lepidoptera including the burnets.

Viper's-bugloss was attractive to several other Lepidoptera: 16 species were seen feeding and two species were noted at rest but not feeding. Small Skipper *Thymelicus sylvestris* Poda and Essex Skipper *Thymelicus lineola* Ochs. were both recorded, but were not separated during recording. Table 3 shows number of days and maximum number seen for each Lepidoptera species recorded on Viper's-bugloss.

Two species of moth were recorded on Viper's-bugloss but not feeding: Garden Grass-veneer *Chrysoteuchia culmella* (L.) and White Plume Moth *Pterophorus pentadactyla* (L.).

Several other butterfly species were present, but were never seen feeding on Viper's-bugloss, these being: Green-veined White *Pieris napi* (L.), Peacock *Inachis io* (L.), Speckled Wood *Pararge aegeria* (L.), Gatekeeper *Pyronia tithonus* (L.), Small Heath *Coenonympha pamphilus* (L.), Ringlet *Aphantopus hyperantus* (L.) and Painted Lady *Vanessa cardui* (L.), a single fresh specimen of which was seen sunning itself on the ground between several Viper's-bugloss stems.

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Coleophora pennella ([Denis & Schiffermüller], 1775) (Lep.: Coleophoridae): larvae feeding on Hound's-tongue *Cynoglossum officinale* L. in England

Emmet (*in* Emmet, 1996. *The Moths and Butterflies of Great Britain and Ireland* **3**: 284–285), cites the British larval foodplants of *Coleophora pennella* (D.& S.) as Viper's-bugloss *Echium vulgare* L. and Alkanet *Anchusa officinalis* L. (given as *Anchusa officinale*). He states that Hering (1957. *Bestimmungstabellen der Blattminen von Europa*) lists other Boraginaceae, but does not specify which these are. In fact they are *Cynoglossum*, *Lithospermum*, *Myosotis*, *Pulmonaria* and *Symphytum*; only the generic names are given by Hering.

As far as we are aware, hitherto no further foodplants have been recorded in the British Isles. We can now add Hound's-tongue *Cynoglossum officinale* L.

On 13 May 2015 we visited Lackford Lakes, Lackford, Suffolk, a Suffolk Wildlife Trust Reserve. Several plants of *Cynoglossum officinale* and *Echium vulgare* were growing just by the entrance to the Reserve. Two larvae of *Coleophora pennella* were found feeding on the leaves of *Cynoglossum officinale* and one was feeding on the leaves of *Echium vulgare*. We spent some time looking at all the plants of both species in that area but these were the only larval cases that were seen. It is odd that of the three that were found two were on a previously unrecorded British foodplant.

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HH BLOOMER MEDAL

Readers may wish to join with the Editor and his team in congratulating Bob Heckford, who was awarded the HH Bloomer Medal of the Linnean Society on 22 May 2015.

This international award was established in 1963 from a legacy by amateur naturalist Harry Howard Bloomer FLS and is awarded to "*an amateur naturalist who has made an important contribution to biological knowledge*." Bob is a regular contributor to this journal, including the present issue, and we are happy to discover that the publication of his many original discoveries in our pages, as well as in the pages of the *Entomologist's Gazette*, has played a not insignificant role. The formal citation reads as follows:

Robert (Bob) Heckford, a solicitor by profession but now retired, is the most gifted field microlepidopterist Britain has had in many decades. It is his ambition to clarify Microlepidoptera life histories not previously observed in the British Isles. The list of his 230 meticulous, superbly researched notes and papers (170 in his own name, 70 co-authored) published over almost 40 years in British entomological journals bears witness to his industriousness, perseverance and success. Bob has particular skill in clarifying the unknown or poorly known life histories of British small moths. For example, he succeeded in finding the larvae of all 13 British species of the genus Bryotropha *(Gelechiidae) and he described them and their previously unknown habits in rare detail. A large number of life histories were firsts for the British Isles, some (such as* Bryotropha politella *(Stainton)) new to science. Bob also discovered several species new to the British Isles and one of his discoveries in Devon, a species of Nepticulidae new to science, was named in his honour:* Ectoedemia heckfordi. *Bob also pursued with rare perseverance species not seen in the British Isles in many years and sometimes believed to be extinct. Although he concentrates on the British fauna, he makes extensive use of the Continental literature, old and new, to learn everything that has ever been published on the species in question. The breadth and depth of his knowledge made him a natural choice to be a co-editor of the recently revised Checklist of the Lepidoptera of the British Isles, a Royal Entomological Society Handbook published in 2013. It is of no surprise that Bob's expertise is in wider demand, for example in his contribution to public engagement by demonstrating moth identification at recording events. For example, Bob was the sole moth specialist of 14 entomologists who were invited to take part in a Bioblitz at Prince Charles's Highgrove Estate. In recognition of his achievements he was made a Scientific Associate of the Natural History Museum, London, in 2010, and his exceptional collection of British Microlepidoptera is promised to that institution. Thus, his outstanding achievements in clarifying previously unknown life-histories of British Microlepidoptera make Bob Heckford a most worthy recipient of the HH Bloomer award for an amateur naturalist.*

The recipients, alternatively a botanist and a zoologist each year – although sometimes there have been years without an award – are presented with a silver medal. Bob joins a select list, which may be viewed at *www.linnean.org/The-Society/awards_and_grants/The+H+H+Bloomer+Award*.

EDITOR

A CONTRIBUTION TO THE MICROLEPIDOPTERAN FAUNA OF CYPRUS

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Abstract

From six trips 65 species of microlepidoptera, believed to represent the first documented records for Cyprus, are presented.
Keywords: Cyprus, microlepidoptera, first records.

Introduction

The Microlepidopteran fauna of Cyprus has been studied by many lepidopterists including Amsel (1958) and Arenberger and Wimmer (1999). The author has undertaken six moth collecting trips, licenced by the Cypriot Government, commencing in the spring of 2012. Based in Nikokleia, in the Paphos District of south-west Cyprus, 585 species have been recorded so far. Of these, 41 species remain undetermined. Most specimens originate from Nikokleia, but material from nine other sites within 20km of Nikokleia has been collected. There are also a small number of specimens from a day trip up into the Troodos and a day trip to Akrotiri in the company of, and under the licence of, local naturalist Christodoulos Makris. The author is not aware of any current definitive list of Lepidopteran species recorded on Cyprus. Wikipedia (*http://en.wikipedia.org/wiki/List_of_Lepidoptera_of_Cyprus*, accessed January 2015) proffers an estimate of 773 species but, given the size of the island, the diversity of habitats and the number of species recorded by the author in such a small area, it seems likely that many more species will be identified in the future.

In this present work, 66 species are presented, 65 of which are believed to represent the first documented records for Cyprus, plus one species record of notable data. Of the 65 species thought to be new, there are unpublished records for four that have been brought to the author's attention. Given the fragmented nature of recording on Cyprus to date, and the apparently common status of some of these species, it seems very likely that others may have recorded some of the remaining 61 species previously.

Method

Moths were mostly collected at light, with the following sources being used: Actinic: Heath trap: 6W (mains or battery) and 40W (mains); 15W (battery) against a white sheet. Some *impromptu* use of incandescent light outside the author's accommodation was also made. Sweeping, netting around food plants, dusking and, very occasionally, beating were also used. Leaf-mines were searched for, with some specimens successfully bred through.

Moths were anaesthetised using 100% acetone (locally-bought nail polish remover), pinned and set in plastazote-lined boxes, then placed in a freezer overnight. Genitalia preparations carried out by the author were made in the standard way (Robinson

1976), but with some male specimens unrolled; all genitalia were mounted in euparal. Specimens from the *Nepticulidae* and *Opostegidae* were dissected by Eric van Neiukerken (Leiden) with abdominal material being used for DNA barcoding.

The majority of specimens are retained in the author's own collection; some have been donated to other collections. As part of the licence agreement, some named specimens will be donated to the collection of the Cypriot Agriculture Department at some point in the future. All material has been collected and named by the author unless otherwise stated.

After consulting various experts and undertaking Web and literature searches, these records are presented as the first documented records for Cyprus, unless otherwise stated. Any inaccuracy in reporting these records as such are the author's responsibility.

Site names, coordinates and altitudes

Agios Nikolaos: N34 8720465: E32 8033921, altitude 840m
Akrotiri dunes: N34 5769496: E32 9435348, altitude 18.6m
Asprokremnos Dam Weather Station: N34 7289161: E32 5533914, altitude 92m
Diarizos, Kouklia: N34 7169410: E32 5733685, altitude 35m
Gerovesa turn: N34 8145784: E32 7222365, altitude 330m
Kidasi Gorge: N34 7971623: E32 7040358, altitude 265m
Nikokleia: N34 7316760: E32 5851166, altitude 70m
Oreites Forest site A: N34 7307149: E32 6366901, altitude 340m
Oreites Forest site B: N34 7312792: E32 6426553, altitude 370m
Oreites Forest site C: N34 7209623: E32 6292014, altitude 390m
Xeros Potamos site A: N34 7152478: E32 5488317, altitude 22m
Xeros Potamos site B: N34 8029857: E32 6087522, altitude 155m

Abbreviations used

GB - Giorgio Baldizzone, Asti
FauEur - Fauna Europaea website
RG - Reinhard Gaedike, Bonn
SK - Sjaak Koster, Leiden
LK - Lauri Kaila, Helsinki
OK - Ole Karsholt, Copenhagen
AL - Ales Laštůvka, Czech Republic
KN - Kari Nupponen, Espoo
EvN - Erik van Neiukerken, Leiden
SS - Sergey Yu. Sinev, St Petersburg
FS - Frantisek Slamka, Bratislava

Nepticulidae

Stigmella glutinosae (Stainton, 1871). Xeros Potamos B, occupied mines in *Alnus orientalis* Decne., collected 11.v.2014, bred through, specimens IB1945 and IB1946, det. by genitalia (EvN). New food plant record. Known throughout much of Europe (FauEur).

Stigmella trimaculella (Haworth, 1828). Agios Nikolaos, vacated mines on *Populus nigra* L., 09.x.2013. Gerovesa turn, occupied mine, collected 29.ix.2014, bred through. Det. by genitalia (EvN). Known throughout most of Europe (FauEur) and east into Asia (*www.bladmineerders.nl*: accessed October 2014).

Stigmella amygdali (Klimesch, 1978). Nikokleia, 10.x.2013, ♂ specimen IB1409. Det. by genitalia (EvN). Known from Greece (FauEur).

Stigmella ficulnea Puplesis & Krasilnikova 1994. Nikokleia, 27.ix.2014: numerous vacated *Stigmella* mines in *Ficus carica* var. (Plate 1) are likely to be this species (EvN pers. comm.). Known from Turkmenistan.

Opostegidae

Pseudopostega chalcopepla (Walsingham, 1908). Nikokleia, 25.iii.2014, specimen IB1544 (Plate 4), confirmed by genitalia (EvN). Known from southern France, Portugal, Monaco, Iberian Peninsula (FauEur), Tunisia and Morocco (van Nieukerken *et. al.* 2004).

Heliozelidae

Heliozela resplendella (Stainton, 1851). Kidasi Gorge, a vacated mine (Plate 3) on *Alnus orientalis*, 11.v.2014. Known across northern, western and central Europe (FauEur).

Tineidae

Neurothaumasia tenuipennella Gaedike, 2011. Nikokleia: ♂♂: 28.ix.2013 specimen IB1112, gen. prep. IBCY247; 02.x.2013 specimen IB1269, gen. prep. IBCY372; ♀ 09.x.2013 specimen IB1394, gen. prep. IBCY245. Det. RG. An earlier record has since been seen (RG pers. comm.): 1 male, "Troodos-Geb., Tripylos Cedar Valley, 1300m, 11.viii.1983, leg. E. Arenberger". Known from France, Greece, Romania and Croatia (Šumpich, 2014).

Tinea basifasciella Ragonot, 1895. Nikokleia, 07.iv.2013, ♀ specimen IB199, gen. prep. IBCY257. Det. RG. An earlier record has since been seen (RG pers. comm.): 1 male, 1 female, "Zypern, Umgebung Paphos, 29.iv.-13.v.1994; 25.v.-1.vi.1995, leg. J. Wimmer". Known from Iberian Peninsula, France, Italy, Croatia, Albania, Macedonia and Greece (FauEur).

Proterospastis merdella (Zeller, 1847). Nikokleia, 10.x.2013, ♂ specimen IB1416 (Plate 5), gen. prep. IBCY281. Det. RG. Known from Iberian Peninsula, Sicily, Croatia and Greece (FauEur).

Wegneria panchalcella (Staudinger, 1871). Nikokleia: 30.ix.2013, ♂ specimen IB1188, gen. prep. IBCY246; 01.x.2014, ♂ specimen IB2098, gen. prep. IBCY851. Known from Canary Islands, Greece, Macedonia, Bulgaria, Ukraine, SE European Russia, Transcaucasia, Asia Minor, Middle East, Central Asia and North Africa (Tokár & Ferenc, 2012).

Douglasiidae

Tinagma ocnerostomella (Stainton, 1850). Nikokleia: all 14-28.iv.2012: ♀♀: specimens IB84 & 85; ♂♂ specimens IB86 & 87. Known from much of Europe (FauEur).

Gracillariidae

Acrocercops brongniardella (Fabricius, 1798). 3km north of Kidasi - Lat: 34.817338, Long: 32.719882, alt. 305m, occupied mines on *Quercus infectoria* subsp. *veneris* (A. Kern.) Meikle, collected 28.iii.2014, bred through, specimens IB1611-12, IB1614-20, confirmed by genitalia. Known across most of Europe (FauEur).

Dextellia dorsilineella (Amsel, 1935). Nikokleia: 04.x.2013 specimen IB1290 (Plate 6); 10.x.2013 specimen IB1419. Det. Jaroslaw Buszko. Known from Spain, Italy and Greece (FauEur).

Phyllonorycter corylifoliella (Hübner, 1796). Asprokremnos Dam, 05.v.2014, ♂ specimen IB1728, gen. prep. IBCY777. Known from across Europe (FauEur).

Phyllonorycter hostis Triberti 2007. Nikokleia, ex mine *Malus domestica* var. Borkh., collected 08.x.2013, emerged 10.x., ♂ specimen IB1452, gen. det. IBCY840; Oreites Forest, 02.x.2014, to light, ♂ specimen IB2122, gen. prep. IBCY832. Known from UK, Norway, Germany, Italy, Serbia and Montenegro, Macedonia (FauEur), and Czech Republic (AL, pers. comm.).

Phyllonorycter stettinensis (Nicelli, 1852). Kidasi Gorge: 13.v.2014, swept from *Alnus orientalis*, ♂ specimen IB1859, gen. prep. IBCY776; 16.v.2014, to light, specimen IB1931. Det. AL. Known from UK and France across to Bulgaria and central Russia (FauEur).

Phyllonorycter trifasciella (Haworth, 1828). Gerovesa turn, 13.v.2014, ♀ to light, specimen IB1855, gen. prep. IBCY779. Known across Europe with isolated populations in Macedonia and central Russia (FauEur).

Phyllocnistis saligna (Zeller, 1839). 2013: Kidasi Gorge, 04.x., mines on *Salix alba* L. (det. Jaroslaw Buszko); Kouklia (Diarizos), 10.x., two pupae retained (failed). 2014: Kouklia (Diarizos): 28.iii: netted around *S. alba* saplings: ♂ specimen IB1571, gen. prep. IBCY773, ♀♀ specimen IB1572, gen. prep. IBCY772, specimen IB1574, gen. prep. IBCY769 and IB1573; occupied mines bred through ♂♂ specimens IB1603, IB1604 and IB1608; ♀♀ specimens IB165-7. Kidasi Gorge, 16.v, to light, specimen IB939. Known across most of Europe (FauEur). Found as far east as Iran (Jaroslaw Buszko pers. comm.).

Ypsolophidae

Ypsolopha albiramella (Mann, 1861). Nikokleia, 10.x.2013, ♂ specimen IB1438 (Plate 7), gen. prep. IBCY375. Known from Italy, Croatia, Albania, Macedonia, Greece (FauEur), Russia, Iran, Israel, Turkmenistan, Asia Minor and China (Jin *et al,* 2013).

Bedelliidae

Bedellia somnulentella (Zeller, 1847). Nikokleia, 18.iv.2013, occupied mines on *Convolvulus arvensis* L., bred through, confirmed by genitalia. Near cosmopolitan distribution.

Depressariidae

Agonopterix curvipunctosa (Haworth, 1811). Nikokleia: 07.v.2014, ♂ specimen IB1753, gen. prep. IBCY640; 13.v.2014, ♀ specimen IB1837, gen. prep. IBCY639. Known across most of Europe (FauEur).

Elachistidae

Elachista consortella (Stainton, 1851). Nikokleia: 16.iv.2013, specimen IB429. Det. LK. Known from most western Europe, east of Slovakia distribution patchy (FauEur).

Elachista biatomella (Stainton, 1848). Diarizos river, Kouklia, 12.v.2014, ♂ specimen IB1823, gen. prep. IBCY666. Det LK. Known from Portugal, British Isles and Sweden, across central and southern Europe (not most Balkan countries) to Ukraine (FauEur).

Elachista sp. *near kleini* Amsel, 1935. Kouklia, 10.iv.2013, swept from *Juncus* sp. on side of Diarizos below village, ♂ specimen IB277, gen. prep. IBCY239; Nikokleia, 12.iv.2013, to light, ♂ specimen IB319, gen. prep. IBCY256. Det LK. Known from Spain, Portugal, Yugoslavia and Turkey (Karsholt & Razowski, 1996).

Note: The genitalia slide of the holotype of *E. kleini* was lost in the 1970s and the photographs of it are inconclusive so, until the species *E. kleini* is resolved through more material from the original capture site, these specimens are best treated as 'near kleini' (LK pers. comm.).

Scythrididae

Scythris canescens (Staudinger, 1880). Nikokleia: 08.iv.2013, ♂ specimen IB240 (Plate 8), gen. prep. IBCY172; 29.ix.2013, specimen IB1140; 01.x.2013, ♂ specimen IB1217. Det KN. Known from Greece (KN pers. comm.), Morocco, Algeria, Tunisia, Libya, Turkey, Syria, Iran, Afghanistan, Uzbekistan and Pakistan (Passerin d'Entraves & Roggero, 2010).

Oecophoridae

Borkhausenia minutella (Linnaeus, 1758). Nikokleia, 28.iii.2014, ♂ specimen IB1598, gen. prep. IBCY566. Known across much of Europe (FauEur), elsewhere Turkey and Armenia (Tokár, *et al*., 2005).

Batia sp., a new species recently described by Tokár & Jaworski, in press. All Nikokleia: 28.ix.2013, ♀♀: specimens IB1117, gen. prep. IBCY238 and IB1118; 27.ix.2014, specimens IB2007 and IB2008; 28.ix.2014, specimen IB2030 and ♂ specimen IB2031, gen. prep. IBCY790; 30.ix.2014, specimen IB2076; 01.x.2014, specimen IB2097. These records indicate that it is not tied to *Quercus alnifolia*, which is endemic to ophiolite rock from 400 to 1800m in the Troodos (MOA, 2014), from which the holotype and paratype specimens were bred.

Batia samosella Sutter, 2003. Asprokremnos Dam, 05.v.2014, ♂ specimen IB1715, gen. prep. IBCY696; Nikokleia, 07.v.2014, ♂ specimen IB1764 (Plate 9), gen. prep. IBCY667. Known from Greece (FauEur).

Stathmopodidae

Tortilia flavella Chrétien, 1908. (Plate 2) Nikokleia, 28.ix.2013, ♀ specimen IB1121, gen. prep. IBCY332. Det. SK. Known from N. Africa through the Middle East to India (Koster & Sinev, 2003).

Lecithoceridae

Homaloxestis hades Gozmany, 1978. Nikokleia: 28.ix.2013, ♀ specimen IB1126 (Plate 10), gen. prep. IBCY313; 12.v.2014, ♂ specimen IB1829, gen. prep. IBCY661. Known from Turkey (Gozmany, 1978).

Odites kollarella (O.G. Kosta, 1832). Nikokleia: 28.ix.2013, specimen IB1109; 29.ix.2013, specimen IB1148. Known from Portugal, Spain, France, Italy, Croatia, Hungary, Moldova and Greece (FauEur), also Slovakia (Pastorális, 2010).

Coleophoridae

Coleophora basimaculella Mann, 1864. Nikokleia: ♂♂: 21.iv.2012, specimen IB57; 19.iv.2012, specimen IB58; 06.iv.2013, specimen IB133; 17.iv.2013, specimen IB455; 18.iv.2013, specimen IB482. Known from Greece (FauEur), also Turkey, Lebanon & Egypt (Baldizzone *et al*., 2006).

Coleophora nigridorsella Amsel, 1935. Nikokleia, 11.v.2014, ♂ specimen IB1809 (Plate 11), gen. prep. IBCY628. Known from Greece, Macedonia and Southern Russia (FauEur), also Hungary, Turkey, Turkmenistan, Caucasus and Arabian Peninsula (Ferenc *et al*., 2014).

Coleophora aliena Baldizzone, 1987. Gerovesa turn, 13.v.2014, swept from *Prunus sp*. growing in the flood zone of a small river bed in a steep sided valley, ♂ specimen IB1850, gen. prep. IBCY673. Det. GB. Known from Spain.

Note: The habitus is much darker than the specimens from Andalucía, which are whitish, but the male genitalia are identical. The biotope where the Andalucian specimens were collected was steppe, with chalky soils and brackish areas (GB pers. comm.).

Coleophora versurella Zeller, 1849. Nikokleia, 29.ix.2013, ♂ specimen IB1147, gen. prep. IBCY360. Det. GB. Known from much of Europe: from Iberian Peninsula and Ireland through to Central and Southern Russia, and Italy and Greece to Scandinavia (FauEur).

Coleophora texanella Chambers, 1878. Nikokleia, 29.ix.2014, ♂ specimen IB1141, gen. prep. IBCY357. Det. GB. Known from Italy, Greece and France (Landry *et al*, 2013). Adventive species originating from the United States.

Blastobasidae

Blastobasis tarda Meyrick, 1902 = *Neoblastobasis ligurica* Nel, & Varenne, 2004. (Plate 12) Nikokleia, 23.iii.2014, ♂ specimen IB1529, gen. prep. IBCY565. Det. OK. Adventive species, possibly native to Australia, introduced to North America, New Zealand and France (Landry *et al*, 2013).

Autostichidae

Oegoconia deauratella (Herrich-Schaffer, 1854). Nikokleia, 05.x.2013, ♂ specimen IB1333, gen. prep. IBCY290. Confirmed by Jan Šumpich. Known across much of Europe (FauEur).

Cosmopterigidae

Ascalenia pachnodes (Meyrick, 1917). Nikokleia: 06.v.2014, ♀ specimen IB1749 (Plate 13). Det. SS. Two ♂ specimens: Nikokleia, 16.v.2014, specimen IB1928; and Kidasi, 16.v.2014, specimen IB1935; probably represent this species which is known from Sudan, Turkmenistan, Iran and India (SS pers. comm.).

Pyroderces caesaris Gozmány, 1957. Nikokleia, 06.v.2014, ♂ specimen IB1747, gen. prep. IBCY831. Confirmed SK. Known from Spain, Italy, Croatia, and from Greece through to Ukraine (FauEur).

Cosmopterix crassicervicella (Chretien, 1896). Nikokleia: ♂♂: 06.iv.2013, specimen, IB145 gen. prep. IBCY331; 15.iv.2013, specimen IB418, gen. prep. IBCY330. Confirmed SK. Known from Spain, Portugal, Greece, North Africa, Transcaucasus, Asia Minor and Near East. Also from 4 countries in tropical Africa (SK pers. comm.).

Gelechiidae

Metzneria santolinella (Amsel, 1936). Nikokleia, 28.iii.2014, ♂ specimen IB1593, gen. prep. IBCY587. Det. OK. Known from across Europe but not Spain, the Balkan states or Greece (FauEur).

Monochroa hornigi (Staudinger, 1883). Nikokleia, 07.v.2014, ♂ specimen IB1769, gen. prep. IBCY681. Known from across Europe but not Spain, the Balkan states or Greece (FauEur).

Eulamprotes helotella (Staudinger, 1859). All Nikokleia: 06.iv.2013: ♀♀: specimen IB140, gen. prep. IBCY171 and IB141 gen. prep. IBCY170; ♂ specimen IB144, gen. prep. IBCY162. Det. OK. Earlier records known (OK pers. comm.). Known from Portugal, Spain, France, Italy and Greece (FauEur).

Scrobipalpa traganella (Chretien, 1915). Nikokleia, 07.iv.2013, ♂ specimen IB210, gen. prep. IBCY350. Earlier records known (OK pers. comm.). Known from Portugal, Spain and France (FauEur).

Scrobipalpa ergasima (Meyrick, 1916). All Nikokleia, 08.x.2013, ♂ specimen IB1381, gen. prep. IBCY337; 07.v.2014,♀ specimen IB1760, gen. prep IBCY691. Known from Portugal, Spain, France, Italy, Macedonia and Greece (FauEur).

Tortricidae

Aethes capnospila (Meyrick, 1912). Nikokleia, 02.x.2014, ♂ specimen IB2125 (Plate 14), gen. prep. IBCY800. Known from: Turkey; Dodecanese islands: Karpathos and Rhodes; Lebanon (Sutter & Karisch, 2006); and Asia Minor (Gilligan *et al*, 2014).

Cnephasiella incertana (Treitschke, 1835). Nikokleia: ♀♀: 23.iv.2012, IBCY29; 07.iv.2013, specimen IB215, gen. prep. IBCY385; 08.iv.2013, specimen IB238, gen. prep. IBCY386. Known throughout most Europe (FauEur).

Archips rosana (Linnaeus, 1758). Kidasi Gorge, 16.v.2014, ♂ specimen IB1906, gen. prep. IBCY653. Known from much of Europe (FauEur).

Epinotia festivana (Hübner, 1799). Gerovesa turn, 13.v.2014, netted at dusk under mature *Quercus infectoria* subsp. *veneris*, specimen IB1835. Known from Central and Southern Europe, east to Southern Russia, Iran and Asia minor (Razowski, 2003).

Epinotia thapsiana (Zeller, 1847). All Nikokleia: ♂♂: 17.iv.2013, specimen IB446, gen. prep. IBCY725; 22.iii.2014, specimen IB1516, gen. prep. IBCY570; 03.v.2014, specimen IB1643,

gen. prep. IBCY724. Known from much of Europe, Turkmenia, Tadzhikistan, Kazakhstan, Russia, Iran, China and Korea (Zhang & Li, 2005).

Pelochrista mollitana (Zeller, 1799). Nikokleia, 04.v.2014, ♂ specimen IB1659, gen. prep. IBCY721. Known from: France to southern Scandinavia; Iberian Peninsula through to Greece and Bulgaria; North Africa; East Baltic to Crimea, Caucasus(?); Kazakhstan (Razowski, 2003).

Gypsonoma minutana (Hübner, 1799). Nikokleia, 02.x.2014, ♀ specimen IB2126, gen. prep. IBCY787. Known across Europe (FauEur), elsewhere from Israel, Iran, Afghanistan, Mongolia, Russia, China, Korea and Japan (Razowski, 2003).

Gypsonoma obraztsovi Amsel, 1959. Kouklia, 28.iii.2014: netted around *Calycotome villosa* (Poir.) Link at dusk: ♀ specimen IB1586, gen. prep. IBCY571; ♂ specimen IB1587, gen. prep. IBCY577. Confirmed BZ. Known in Europe from Hungary and Romania (FauEur). Elsewhere, from Iran and Syria (Zlatkov, 2013).

Clavigesta tokei Larsen, 2010. Oreites Forest site A, 02.x.2014, ♂ specimen IB2114, gen. prep. IBCY791. Det. Knud Larsen. Known from Greece: Thasos, Rhodes; Macedonia; Turkey: Antalya province (Larsen, 2010).

Plate 1. *Stigmella ficulnea* Puplesis & Krasilnikova, 1994. Nikokleia, 27.ix.2014, vacated mines in *Ficus carica* var.

Plate 2. *Tortilia flavella* Chrétien, 1908. Nikokleia, 27.ix.2014.

Plate 3. *Heliozella resplendella* (Stainton, 1851). Kidasi Gorge, 12.v.2014, vacated mine on *Alnus orientalis*.

Plate 4. *Pseudopostega chalcopepla* (Walsingham, 1908). Nikokleia, 25.iii.2014.

Plate 5. *Proterospastis merdella* (Zeller, 1847). Nikokleia, 10.x.2013.

Plate 6. *Dextellia dorsilineella* (Amsel, 1935). Nikokleia, 4.x.2013.

Plate 7. *Ypsolopha albiramella* (Mann, 1861). Nikokleia, 10.x.2013.

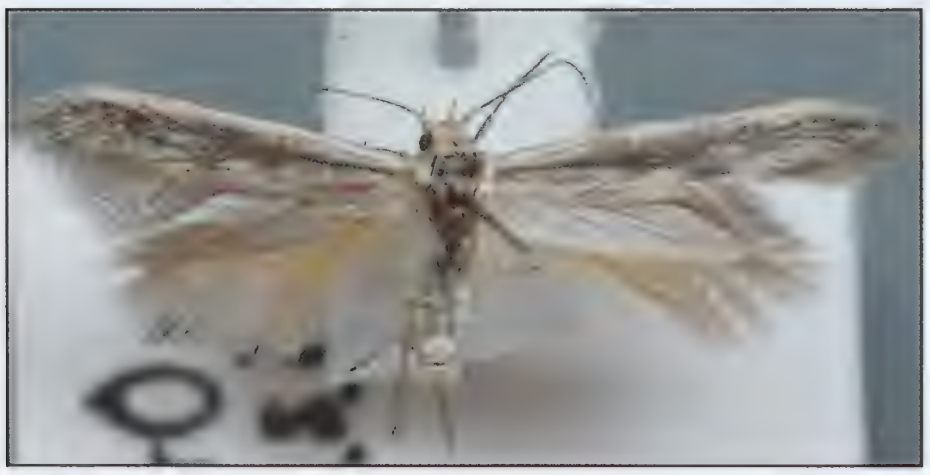

Plate 8. *Scythris canescens* (Staudinger, 1880). Nikokleia, 08.iv.2013.

Plate 9. *Batia samosella* Sutter, 2003. Nikokleia, 7.v.2014.

Cydia centralasiae Obraztsov, 1949. Kouklia, 28.iii.2014: netted around *Calycotome villosa* at dusk: ♀♀: specimen IB1229, gen. prep. IBCY711 and specimen IB1583, gen. prep. IBCY573. Det. BZ. Known from Spain, France, Italy, Switzerland, Austria, Czech Republic, Slovakia, Bulgaria, Ukraine, Russia, Turkmenistan, Kazakhstan and Eastern Uzbekistan (Zlatkov & Budashkin, 2012).

Selania resedana Obraztsov, 1959. Nikokleia, 10.x.2013, ♂ specimen IB1415, gen. prep. IBCY409. Known from Portugal, Spain, France and Italy (FauEur).

Plate 10. *Homaloxestis hades* Gozmany, 1978. Nikokleia, 28.ix.2013.

Plate 11. *Coleophora nigridorsella* Amsel, 1935. Nikokleia, 11.v.2014.

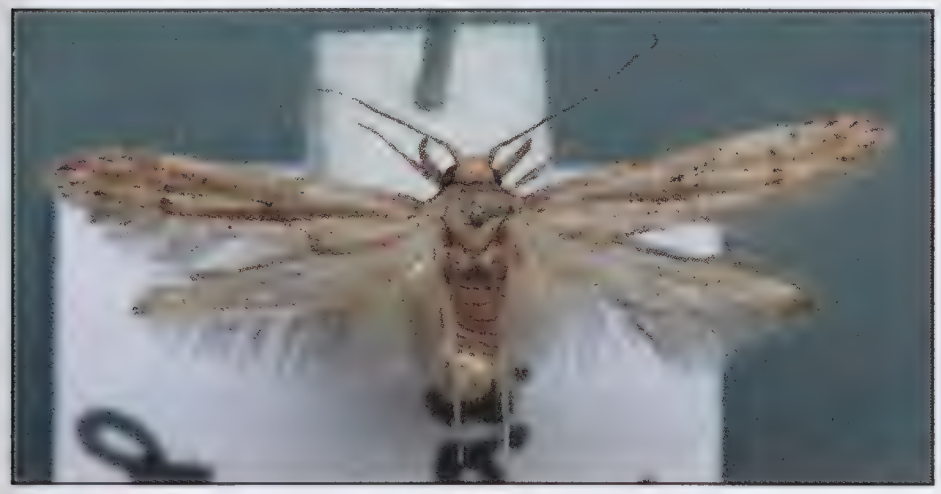

Plate 12. *Blastobasis tarda* Meyrick, 1902. Nikokleia, 28.iii.2014.

Plate 13. *Ascalenia pachnodes* (Meyrick, 1917). Nikokleia, 6.v.2014.

Plate 14. *Aethes capnospila* (Meyrick, 1912). Nikokleia, 2.x.2014.

Plate 15. *Assara conicolella* (Constant, 1884). Oreites Forest, site C, 15.v.2014.

Selania capparidana Zeller, 1847. Nikokleia, 05.v.2014, ♂ specimen IB1719, gen. prep. IBCY717. Known from Italy and Greece (FauEur), also for SW Europe and N. Africa (Razowski, 2013).

Pterophoridae

Stenoptilia aridus (Zeller, 1847). Nikokleia, 17.iv.2012, ♂ specimen (and gen. prep.) IBCY74. Known across southern Europe, from Spain to Greece and Bulgaria (FauEur).

Pyralidae

Pempelia palumbella (Denis & Schiffermüller, 1775). Nikokleia: ♂♂: 01.x.2013, specimen IB1256, gen. prep. IBCY197; 10.x.2013, specimen IB1465, gen. prep. IBCY846. Known throughout most of Europe (FauEur).

Amphithrix sublineatella (Staudinger, 1859). Nikokleia, 06.v.2014, ♂ specimen IB1736, gen. prep. IBCY760. Det. FS. Subsequently a ♀ specimen IB265, collected 09.iv.2013 in Nikokleia, was identified as this species. Known from Portugal, Spain, France, Italy and Croatia (FauEur).

Asalebria florella (Mann, 1862). Nikokleia, 03.v.2014, ♂ specimen IB1633, gen. prep. IBCY754; 04.v.2014, ♀ specimen IB1677, gen. prep. IBCY756. Known from southern European countries, but absent from Poland through to Albania.

Isauria dilucidella (Duponchel, 1836). Nikokleia, 10.x.2013, ♀ specimen IB1445, gen. prep. IBCY199. Det. Jan Asselbergs. Known across much of Europe.

Assara conicolella (Constant, 1884). Oreites Forest site C, 15.v.2014, ♂ specimen IB1882 (see Plate 15), gen. prep. IBCY750. Det. FS. Known from Portugal, Spain, France and Corsica (FauEur).

Crambidae

Euchromius cambridgei (Zeller, 1867). Nikokleia: 29.ix.2013, specimen IB1161; 01.x.2013, specimen IB1226; 03.x.2014, specimen IB1303; 08.x.2013 ♂ specimen IB1385, gen. prep. IBCY211.

Agriphila trabeatella (Herrich-Schaffer, 1848). Nikokleia: 29.ix.2013, ♀ specimen IB1160, gen. prep. IBCY258; 10.x.2013, ♂ specimen IB1435, gen. prep. IBCY259.

Cornifrons ulceratalis Lederer, 1858. Nikokleia, 07.iv.2013, specimen IB219. Det. FS.

Anania verbascalis ([Denis & Schiffermüller], 1775). Nikokleia, 11.x.2013, ♂ specimen IB1468, gen. prep. IBCY221; 29.iii.2014, specimen IB1599.

Diplopseustis perieresalis (Walker, 1859). Nikokleia: 21.iii.2014, to light, specimen IB1509; 27.iii.2014, potted on palm trunk, specimen IB1564. Possible third and fourth records after two males photographed by author in 2011 (Slamka, 2013).

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NEW LEPIDOPTERAN ASSOCIATIONS OF THE MITE *CHELETOMORPHA LEPIDOPTERORUM* (SHAW) (ACARI: PROSTIGMATA: CHEYLETIDAE)

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Abstract

Phoretic females of the mite *Cheletomorpha lepidopterorum* (Shaw, 1794) are recorded for the first time on the noctuid moths Dark Arches *Apamea monoglypha* (Hufnagel, 1766), Smoky Wainscot *Mythimna impura* (Hübner, 1808), Lempke's Gold Spot *Plusia putnami gracilis* Lempke, 1966, Dotted Clay *Xestia baja* (Denis & Schiffermüller, 1775) and Lesser Yellow Underwing *Noctua comes* (Hübner, 1813). New UK locality data are presented for three previously recorded noctuid associations, while published records of *C. lepidopterorum* on moths are tabulated.

Keywords: Scotland, Lepidoptera, Noctuidae, mites, phoresy, *Cheletomorpha*.

Introduction

While observing moths at his home address in Ordiquhill, Banffshire from 1993 onwards, RL occasionally encountered noctuid moths carrying mites. These were not the scarlet parasitic larvae of the Erythraeidae and Trombidiidae (suborder Prostigmata) so often seen on the head, thorax and legs of Lepidoptera, e.g., satyrid butterflies. Instead, they were smaller but with very long legs, and of a dull orange colour. Also, they were attached to the wings of the moth, never to its body or legs. Affected moths were found by a variety of methods: while nectaring at Buddleia, attracted to sugared fence posts, or light-trapped. This implied that the mites were attached firmly enough to withstand being dislodged when the moth flew, even though the smooth forewing scales appeared to offer little grip. RL gradually realised that the mites' presence must be more than a chance infestation and tried to identify the species, but could find very little in the literature about mites on moths in Britain. Accordingly, in 2012 he approached ASB, who provisionally identified those photographed on a Pale Mottled Willow *Caradrina clavipalpis* (Scopoli, 1763) (Plate 1) as female *Cheletomorpha lepidopterorum* (Shaw, 1794) (Prostigmata: Cheyletidae), but requested a specimen. In 2013, RL forwarded a Lesser Yellow Underwing *Noctua comes* heavily infested with the mites and ASB confirmed the identification.

A morphological account of this mite is given in Treat (1975), but it can immediately be distinguished from other moth-associated species by its exceptionally long and slender front pair of legs that are approximately twice the body length (Plate 2). Also, it has four rather than three pairs of legs and two comb-like setae on the end of each palp (Plate 3).

Cheletomorpha lepidopterorum has previously been recorded from a number of moth species (mainly noctuids) (Table 1), but it is better known as a cosmopolitan occupant of stored foods and storage buildings (Hughes, 1976). Early records appeared under the name *Cheyletus venustissimus* Koch, 1839, a species described from stable and hay barn habitats in Germany. Oudemans (1929) later synonymized the two species and the former was accepted as the valid name.

Little has been published about the life of *C. lepidopterorum* away from its moth carriers. Michael (1878) described its eggs as elliptical, blunt ended and polished pearly white. Both he and Hughes (1957) observed that the eggs were laid singly and spaced out, and attached to the substrate by a few fine silk threads. The silk emanates from the oral cavity within the cone-shaped subcapitulum (Plate 3) and is stretched from side to side over each egg, sometimes being manipulated by the palp tibial claw (Hughes, 1957). The egg hatches into a six-legged larva, followed by two eight-legged nymphal stages and the adult. Completion of the life cycle takes two to three weeks at 23°C and 87 per cent relative humidity, and the eggs usually develop parthenogenetically into females (Hughes, 1976). Males are rare, but a batch of nearly all males may sometimes occur (Michael, 1878). The orange colour appears at the end of the larval stage and gets progressively deeper through to the adult. Similarly, the front pair of legs gets proportionately more elongate.

Cheletomorpha lepidopterorum is a free-living predator whose diet includes fungivorous mites of the family Acaridae which also occur in storage habitats. All active life stages will feed on acarids and their eggs (Hughes, 1976). Michael (1878) observed a captive adult *C. lepidopterorum* catch prey by lying in wait, usually on the undersurface of an object, with its front legs and palps widely extended. When a mite wandered between the palps, he describes it being killed by stabs from the large palp tibial claw and the rostrum, the part of the subcapitulum arrowed in Plate 3. It is possible, however, it was the needle-like chelicerae located over the rostrum that were used for stabbing and not the rostrum itself. Prey mites presented to the captive *C. lepidopterorum* on one day were almost always dead and sucked dry by the next.

The mite-moth relationship is accepted as being phoretic, i.e., for transport only, and there is no evidence for the statement by Evans *et al.* (1961) that *C. lepidopterorum* 'probably preys on other small fry carried by the insect'. Individuals can be present in very large numbers; van Eyndhoven (1964), for example, counted 227 on a Pearly Underwing *Peridroma saucia* (Hübner, 1808) trapped in the Netherlands. However, no detrimental effects on carriers have been reported.

Here, we report five moth species as carriers for the first time, while new locality data are presented for three previously recorded associations.

Observations in Banffshire

Record dates range from 27 July to 4 September over the period 1993-2014. RL observed *C. lepidopterorum* on eight noctuid species (Table 1). For five, it was their first record as carriers: Dark Arches *Apamea monoglypha*, Smoky Wainscot *Mythimna impura*, Lempke's Gold Spot *Plusia putnami gracilis*, Dotted Clay *Xestia baja* and

Lesser Yellow Underwing *Noctua comes*. Large Yellow Underwing *Noctua pronuba* (Linnaeus, 1758) was a new carrier record for the UK, and Double Dart *Graphiphora augur* (Fabricius, 1775) and Pale Mottled Willow *C. clavipalpis* new for Scotland. Previous records for the latter three species are respectively Denmark, England, and England and the Netherlands (Table 1). No *C. lepidopterorum* were noticed on the many other noctuid species examined in Ordiquhill, nor on moths of any other family.

Pale Mottled Willow was most often infested, with the majority of individuals carrying mites. Sometimes these were so numerous that the forewings appeared speckled with orange as if part of the colour pattern (Plate 1). Detailed records were not kept, but less than 1% of Lesser Yellow Underwing, Double Dart and Dark Arches were affected, although individuals could be heavily infested.

Two of 91 Large Yellow Underwing light-trapped on 1 August 2014 each had dozens of *C. lepidopterorum* on their forewings, the other individuals apparently being free of mites. The single specimens of Lempke's Gold Spot and Smoky Wainscot were collected on the morning of 15 August 2014 as corpses on the bottom of a light trap. The trap had been set about a week earlier on the night of the 7th, but heavy rain arrived before the catch could be released on the evening of the 8th. Therefore it was removed to a bale of straw in an open-fronted barn so that the moths could fly away as and when they wished. The wet weather continued, preventing trapping, and the trap was left in the barn until the evening of 14 August. When examined the next morning, the two old worn corpses were both heavily infested with *C. lepidopterorum*, yet no mites had been noticed when the moths were originally caught on 7 August. A check of the egg trays inside the trap revealed an average density estimated at one mite per 6 sq. cm. RL examined the Lempke's Gold Spot under a microscope and observed mites on its abdomen as well as on all wing surfaces. When exposed to sunlight, some of the mites moved around freely but others were static and seemingly attached.

Usually, mites were first spotted on the upperside of the moths' forewings, mainly because they would be most visible there, but were also observed on other wing surfaces. On a Lesser Yellow Underwing, for example, they occurred on both the upper- and underside of the forewings, and on the underside of the hindwings. Even when numerous on the forewings, none were ever noticed on the head, thorax or abdomen of the moth, nor on its legs or antennae. The mites appeared to be randomly scattered rather than clustered, though with few or none along the costa. Most or all were aligned in the same direction, whether on the upper or underside of the wing, with their longitudinal body axis parallel to the wing length and their gnathosoma ('head') towards the termen. All individuals removed for identification were attached to the moth's scales at the posterior region of their body, fixed, it is thought, by an adhesive secretion from the anus.

Discussion

Cheletomorpha lepidopterorum has only been recorded on moths to date, never butterflies or other insects. Considering the association was first noted over 200 years

ago (Shaw, 1794), rather few records have been published (Table 1). Despite this, it is apparent that noctuids, and particularly Pale Mottled Willow, are most prone to infestation, evidently because their life histories and resting habits bring them into contact with the mite more frequently than other families.

Table 1. Moths recorded carrying *Cheletomorpha lepidopterorum* (if the species name used in the reference differs from the current one, it is given in square brackets). *= new association record; †= identified as *Cheyletus venustissimus*; ‡ = no species name given, record based on text description; • = locality not specified in publication, taken from address of author.

Carrier	Locality	Reference
Family Erebidae		
Catocala nupta	Wormerveer, Netherlands	van Eyndhoven, 1964
Family Geometridae		
Thalera fimbrialis	Aye, Belgium	Cooreman, 1946
Xanthorhoe fluctuata	Hameln, Germany	Haller, 1881† [*Larentia fluctuata*]
Family Lasiocampidae		
Malacosoma neustria[1]	Amsterdam, Netherlands	van Eyndhoven, 1970
Family Noctuidae		
Amphipyra tragopoginis	Cheadle, England•	Bostock,1889† [*A. tragopogonis*]
Anarta trifolii	Woodwalton Fen[2], England	van Eyndhoven,1964 [*Scotogramma trifolii* [=*Dicestra trifolii*]]
*Apamea monoglypha**	Ordiquhill, Scotland	This paper
Caradrina clavipalpis	England•	Stainton, 1865 ‡ [*Caradrina cubicularis*]
	Chester, England	Arkle, 1889‡ [*Caradrina quadripunctata* (*cubicularis*)]
	Cheadle, England•	Bostock, 1889† [*Caradrina quadripuncta*]
	County Durham or South Northumberland, England	Hull, 1918a† [*Caradrina cubicularis*]
	Penrith & Minstead, England	van Eyndhoven, 1964 [*Caradrina* [= *Charanyca*] *clavipalpis*]
	near Amsterdam, Netherlands	van Eyndhoven, 1964 [*Charanyca clavipalpis*]
	Tring, England	van Eyndhoven, 1970
	Ordiquhill, Scotland	This paper
Caradrina morpheus	Cambridgeshire, England[3]	van Eyndhoven, 1964
Graphiphora augur	Reading, England•	Butler, 1889‡ [*Noctua augur*]

Carrier	Locality	Reference
	Ordiquhill, Scotland	This paper
Hadena bicruris	Namur, Belgium	Cooreman,1946 [*Miselia bicruris*]
*Mythimna impura**[4]	Ordiquhill, Scotland	This paper
*Noctua comes**	Ordiquhill, Scotland	This paper
Noctua pronuba	Island of Møn, Denmark	Enghoff, 1988
	Ordiquhill, Scotland	This paper
Peridroma saucia	Bussum, Netherlands	van Eyndhoven, 1964
*Plusia putnami gracilis**[4]	Ordiquhill, Scotland	This paper
Proxenus mindara	California,USA	Treat, 1975
Proxenus sp.	California, USA	Summers & Price, 1970
*Xestia baja**	Ordiquhill, Scotland	This paper
Family Oecophoridae		
Hofmannophila pseudospretella	Not given	Hughes, 1976
Family Tineidae		
Tinea sp.	Venice, Italy	Berlese, 1881†
Moth a "Phalaena"	England•	Shaw, 1794
'small common moth'	Newcastle-upon-Tyne, England•	Bold (1844)‡, Newman (1844)‡
Moth	England	van Eyndhoven, 1964

[1] Laboratory reared.

[2] Locality mistakenly given as 'Hants' (= Hampshire) by van Eyndhoven (1964), an error repeated by Treat (1975). The specimen slide label actually reads 'Hunts' (= Huntingdonshire), a county now part of Cambridgeshire.

[3] No locality given in publication, data taken from specimen slide label (given as Huntingdonshire, see comment above).

[4] Specimen dead, removed from light trap.

UK habitat records for *C. lepidopterorum* include barns (Hull, 1918a), hay and straw stacked in open fields and yards (Griffiths, 1960), and farm-stored cereals and bulk grain (Griffiths *et al.*, 1976). These are all situations in which its prey mites live and which are favoured by certain noctuids. The prevalence of infestation on Pale Mottled Willow observed by RL and noted previously by van Eyndhoven (1970) may be because the female moth is attracted to newly baled hay (Corley, 2012, RL pers. obs.), an old name for the species being Hay Moth. According to Heath & Emmet (1983), the chief food of its caterpillar is grain in the ear and seeds of other grasses, particularly when stored in ricks or as fodder, where Newman (1869) described it as becoming a pest. At Ordiquhill, a fully grown larva was found in a partly used hay bale. Van Eyndhoven (1964) describes seeing live and very active *C. lepidopterorum*

in an experimental hay-stack and remarked that it 'certainly would have been very easy for them to come into contact with a moth at rest at this locality'. Further evidence for habitat overlap is provided by six other of the noctuids found between hay bales by Corley (2012) being known carriers of *C. lepidopterorum* (Table 1). These are Large Yellow Underwing, Lesser Yellow Underwing, Smoky Wainscot, Double Dart, Dark Arches and Mouse Moth *Amphipyra tragopoginis* (Clerck, 1759).

Live moths found to be infested at Ordiquhill had presumably roosted in the barn or some similar place. We cannot be certain whether the Lempke's Gold Spot and Smoky Wainscot were alive or dead when infested, however, the density of the mites observed on the egg trays indicates they had actively congregated on the moths, rather than it being a purely chance finding. The mites seen moving freely over the former species could either have been in the process of finding a place to attach or had detached themselves after the moth's death in order to search for a live carrier.

Despite most carriers being noctuids, there is support for the hypothesis that *C. lepidopterorum*-moth associations are opportunistic rather than specific. Van Eyndhoven (1970), for example, described how a laboratory-reared Lackey *Malacosoma neustria* (Linnaeus, 1758) (Lasiocampidae) escaped and was later recaptured within the same building bearing *C. lepidopterorum*. This mite has also been recorded in uncultivated habitats, e.g., open grass (Hull, 1918a), pine needles (Hull, 1918b) and bird nests (Woodroffe, 1953), where it could take advantage of any visiting moths. The collection of further mite-carrier records will increase our

Plate 1. *Caradrina clavipalpis* with *Cheletomorpha lepidopterorum* distributed over the upper surface of the forewings. Collected Ordiquhill, Banffshire, 2 August 1996 (photograph R. Leverton).

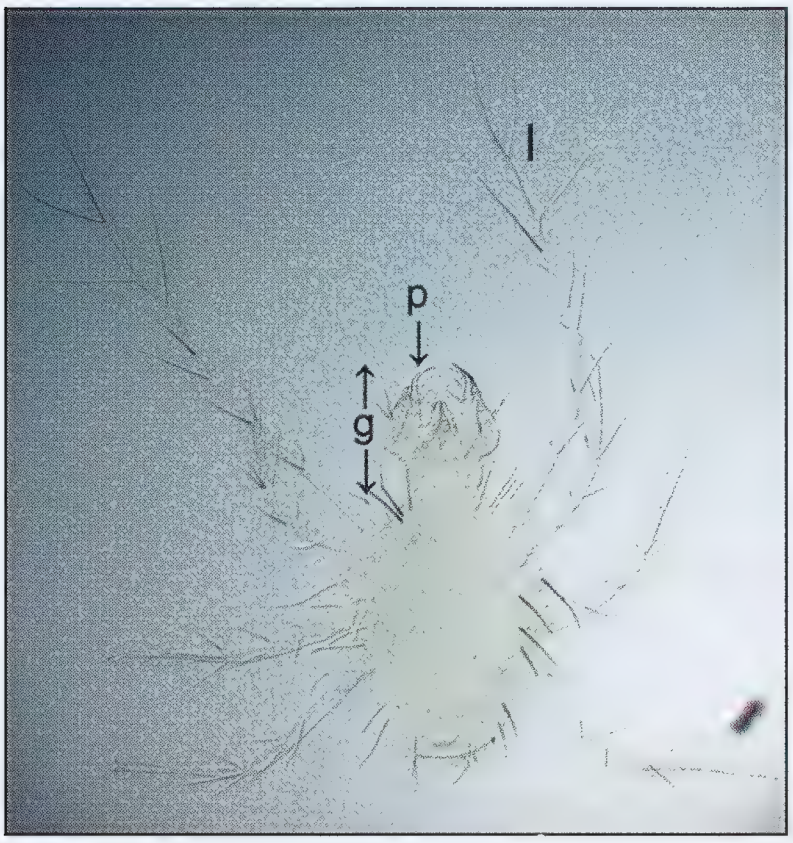

Plate 2. *Cheletomorpha lepidopterorum*. Whole dorsal view of adult female. I = front pair of legs; g = gnathosoma; p = palp. Museum specimen, ex. *Anarta trifolii*, Woodwalton Fen, Cambridgeshire, H.M. Edelsten, 23 May1938 (photomicrograph A.S. Baker).

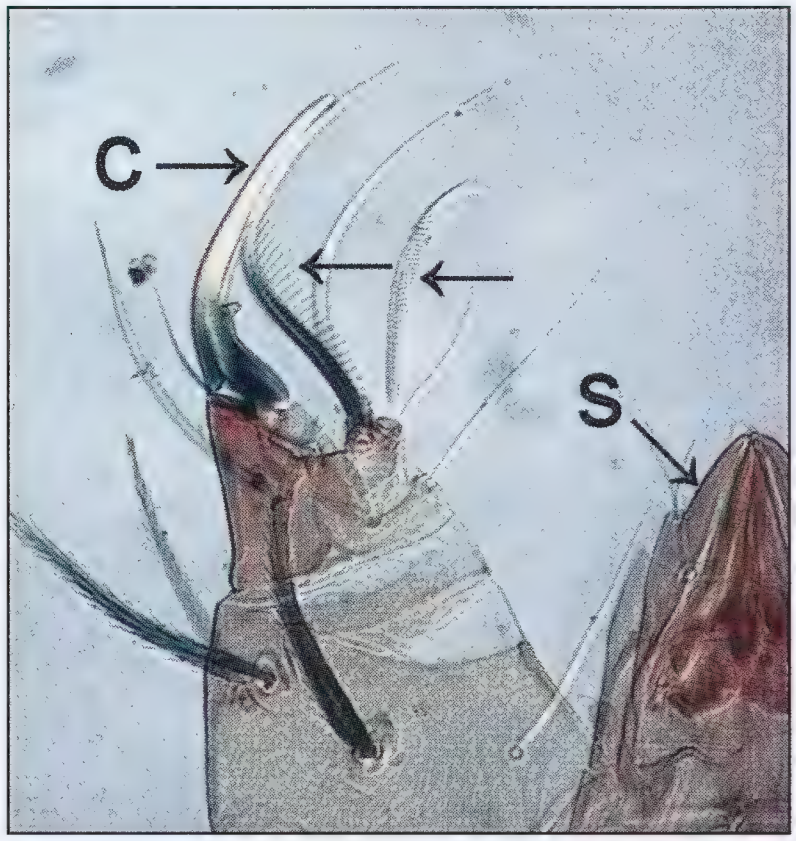

Plate 3. *Cheletomorpha lepidopterorum*. Palp and subcapitulum of adult female. c = palp tibial claw; s = subcapitulum, arrows = comb-like setae. Museum specimen, ex. *Caradrina morpheus*, Cambridgeshire, J.E. Nowers, 9 August 1944 (photomicrograph A.S. Baker).

knowledge of the range of species with which *C. lepidopterorum* comes into contact, and, in turn, may shed light on the variety of habitats it occupies.

Cheletomorpha lepidopterorum has been found on the upper- and undersurface of both wing pairs, although rarely where the undersurface of the forewings and upper of the hindwings come into contact (van Eyndhoven, 1964). This implies that either mites choosing the latter site are dislodged during flight or that the area is deliberately avoided for attachment. As observed in the Ordiquhill moths, the mites' orientation is invariably parallel to the wing length and facing the termen (van Eyndhoven, 1964; Enghoff, 1988). Presumably, this is the optimal arrangement for them to maintain their position when glued by the anus to the wing scales.

Mites that use phoresy for dispersal are phoretic only as deutonymphs (second nymphal stage) or adult females; therefore it is not surprising that only female *C. lepidopterorum* have been found on moths. In temporary and unstable habitats such as stored straw, the trigger for phoretic dispersal is dependent on population density and/or habitat disturbance.

There is much to discover about the relationship between *C. lepidopterorum* and moths, including the process by which the mites locate and board their carriers. The uncertainty over when the Lempke's Gold Spot and Smoky Wainscot were infested raises the question of whether or not moths remain attractive after death. The population of *C. lepidopterorum* in the barn at Ordiquhill provides the opportunity for addressing this question, and RL plans to investigate whether the mites are attracted to dead moths as well as live ones.

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Sialis lutaria L. (Megaloptera: Sialidae) larvae recorded in a pitfall trap

For several years I have been operating pitfall traps around the parish of Old Weston, on the western edge of Huntingdonshire VC31, primarily for beetles and spiders. One such trap is adjacent to a shallow pool on a small brook. As the brook occasionally floods in winter, the trap is situated about 1.5 metres above the normal water level up a steep bank, though even here it has been inundated occasionally resulting in the capture of the occasional aquatic beetle and even a single three-spined stickleback *Gasterosteus aculeatus*. The pitfall traps are checked every two days as the traps are run dry to enable unwanted specimens to be released.

On 13 March 2015, one *S. lutaria* larva was amongst the specimens; this was the first individual of the year. A steady trickle of individuals occurred throughout March and into April. Of the 13 sessions when *S. lutaria* was caught, 10 were of single individuals, on two occasions two were present and there was a single session when three were taken. The multiple individual days occurred between the brief period of 29 March to 4 April and presumably this coincided with peak emergence. On 23 April, the first adult *S. lutaria* was recorded; this was prior to the recording of the last larvae – the adult actually settled on my arm as I was emptying the pitfall trap.

Details were not recorded, but there was a distinct variation is the size of the larvae which didn't become apparent until the occasion when three individuals were captured. The last one taken on 28 April was a large specimen, but these had occurred throughout the recording period as had the smaller examples.

The siting of the pitfall trap was determined for access and, as a random location, it was presumably no better or worse than any other site around the pond. The pool where the trapping occurs has a perimeter of roughly 80 metres and there is also an island in the pool which has a further water edge of about 20 metres, giving an overall boundary approximately of 100 metres. The recorded catch of 17 individuals in a 12 cms diameter pitfall trap could extrapolate to 14,000 individuals if they were evenly distributed across this water edge area.

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The Four-spotted Moth *Tyta luctuosa* (D. & S.) (Noctuidae) and the Grizzled Skipper *Pyrgus malvae* (L.) (Hesperiidae) at Werrington Brook Drain, Peterborough, in 2014

The fortunes of the breeding population of Four-spotted Moth *Tyta luctuosa* (D. & S.) at Werrington Brook Drain from 2000 to 2011 were presented and discussed by Waring (2013. Huntingdonshire Moth & Butterfly Group. 23rd Annual report 2012: 22-26) and for 2013 in Waring (2014. *Entomologists Rec. J. Var.* **126**: 109), in which it was concluded that the number of individuals seen was the lowest since monitoring began at this colony. The aim of this note is to cover the 2014 season and bring us up to date.

I am pleased to report a slight increase in numbers since 2013, but the numbers are still small (10 individuals) and well below the average for the years 2000-2012. Only two individuals were seen during thirteen transect counts from 30 April to 9 July in 2013. In addition, the sightings in 2014 were all limited to a small part of the previous breeding area. The highest annual totals for the Four-spotted Moth on this transect route have been 121 in 2004 and 88 in 2000 and the adult moths are usually seen all along the section of the drain bank covered by the transect route.

The weather in the East Midlands and East Anglia was warmer during 2014 than the long-term average, but changeable during May and June (the main flight period), with lots of sunny days and also periods of heavy rain and dull days. The first monitoring visit to Werrington Brook Drain in 2014 was made on 30 April, just in case any early individuals were already on the wing, as has happened in some years (see Waring, 2013). However, despite good weather and recording nine species of macrolepidoptera on the wing, no Four-spotted Moths were seen. May started well with blocks of sunny dry days, early emergences of many moths and large catches, but just when several of the nationally scarce and rare moth species I monitor were expected to emerge, the weather didn't so much as break on 20 May as totally collapse into a dull and wet period. This was exactly when the Four-spotted moth could have used warm dry conditions to fly and start to build numbers to recover from the unfavourable springs of the previous two years, and earthworks and other management on the site. Counts on 5 May in substandard weather and on 15 May, on a hot sunny day, produced no Four-spotted Moths. On 19 May, the first Four-spotted Moth of the year was seen in sunny weather at just after noon. It was a large male. After that I was unable to get adequate weather for my weekly transect count until 1 June, when I saw a single male and a single female, both in perfect condition, probably freshly emerged. During this period the catches in my garden Robinson trap (with a 125 watt MB/U bulb) fell steadily from 101 macro-moths of 27 species on 20 May, which is an unusually good night's catch for May, to a low point of only 28 macros of three species (Shuttle-shaped Dart *Agrotis puta* (Hb.), Heart & Dart *Agrotis exclamationis* (L.) and Vine's Rustic *Hoplodrina ambigua* (D.&S.) on the morning of 28 May after 48 hours of rain. Further rain was forecast for 29 May. On 6 June two males were seen, both in the southernmost of the repairs to the bank, where slumping had been a problem. This was a good day and a basking Grass Snake *Natrix natrix* L. and a Common Lizard *Lacerta vivipara* L. were both seen in this part of the bank. These were the first sightings of these reptile species on-site for 2014. My transect walk on 10 June produced one male Four-spotted Moth, seen nectaring on Red Clover *Trifolium* sp. 12 June produced a male which was not in fresh condition and a female which was darker and looked freshly emerged. Yet again both were at the southernmost of the three bank repairs. At the same place on 17 June I recorded a single large adult with wing patches which were very white rather than yellowish; this was almost certainly a male, though I was unable to get close enough to see the abdomen. On 22 June a similar large, pale, probable male was seen in the same place. No Four-spotted Moths were seen on 26 and 30 June despite warm sunny weather, and it appeared that the first generation of adults had now come to an end. It is most unusual to have

Plate 1. The condition of the survey area in winter 2014/15. The 2014 annual cut was undertaken in August.

Plate 2. The condition of the survey area in June 2015.

two blank results in a row in good weather in late June and usually the last individual of the first generation is seen about the first week in July. A further transect count was made on 22 July in perfect weather for this moth, to detect any individuals of a partial second generation. None was seen. Often at least one or two adults have been seen about this date in recent years, and this appearance of later adults has been considered an effect of climate warming at this latitude. Thus the total for the year was just ten adults during a total of thirteen appropriately timed transect walks.

There are two particular features to note. The first is that the southernmost of the repaired slippage zones, in and around which all the above moths were seen, was predominantly covered by Black Medick *Medicago lupulina* L. this year, with not much bare earth. On most of the bank the sward was coarser. Secondly, the sole larval foodplant of the Four-spotted Moth is Field Bindweed *Convolvulus arvensis* L. which was present, but not in quantity and not notably more frequent than on some other parts of the site. However, the other two slippage zones had more taller herbage, including Thistles *Cirsium* spp. and Teasels *Dipsacus* sp., as well as more bare earth. Field Bindweed was quite abundant on other parts of the bank during 2014, especially at the north end, yet no Four-spotted Moths were seen here, despite both adults and caterpillars having been found here prior to the reprofiling work which took place from 2-14 July 2012. The reprofiling covered the northern half of the stretch of the bank occupied by the moth. It is almost as if the smaller and possibly more sedentary females have not yet wandered away from a core area in the south part to recolonise other parts of the bank which appear to me to have returned to suitable condition now. Occasionally I have recorded females 1km downwind from this site, in my garden light trap and on Werrington allotments, in neither of which there appear to be permanent colonies. These observations suggest that the females can move sufficient distances to recolonise other parts of the bank, but perhaps they are less inclined to move when at low population density. In this situation it might be an advantage for the female to remain within a few metres of where it grew up successfully.

The Grizzled Skipper *Pyrgus malvae* L. is a warmth-loving butterfly which favours the same sparse open swards in which the Four-spotted Moth formerly occurred on

this bank. It is dependent mainly on Creeping Cinquefoil *Potentilla reptans* L. on this site and has recovered in numbers and distribution on the bank following the recent earthworks. It was already on the wing on my first transect walk, on 30 April, when three adults were seen on the graded north section of the bank where the reprofiling took place. Five adults were seen on the transect walk on 15 May, of which two were on the northern, reprofiled section, and two on the southern undisturbed part, with one seen on the track above the bank. The other records of the Grizzled Skipper on site in 2014 were one on 19 May at the north section, one on 6 June in the southernmost bank repair and one on 12 June on the southern section of the bank. Thus the total number of sightings was eleven adults, spread from 30 April to 12 June, and all along the bank. This is a very good result, a high count for this site and is suggestive that this localised and locally infrequent species has made a quicker and fuller recovery from the earthworking than the Four-spotted Moth has been able to do so far.

The cut and partial scrape of vegetation from the bank is undertaken annually by the Environment Agency as part of their ditch maintenance programme. It is recommended that this takes place in early August in 2015, as usual, but that any further earthworks are postponed for another year to give the Four-spotted Moth a further opportunity to recolonise the northern section of the bank following the reprofiling work of July 2012.

At the time of writing (February 2015), Network Rail is proposing to build a new section of railway line near to Werrington Junction. Various plans are being considered and relevant information about the likely impacts on flood management, wildlife and other issues is being gathered. I will be advising on the likely impact on this local population Four-spotted Moth and plan to be monitoring the effects of the construction work, should it take place.

Contributions to funding the monitoring project at Werrington Junction have been made annually since 2002 by Peterborough City Council (PCC), the Cambridgeshire and Peterborough Biodiversity Partnership (CBP, administered by the Wildlife Trust for Bedfordshire, Cambridgeshire and Northamptonshire) and the Environment Agency (EA). Key contact people and supporters are now the Wildlife Conservation Officer for PCC James Fisher, Nikki Loveday (Wildlife Conservation Officer for EA), Paul Mattacola and Alec Ambridge-Richardson (site management for EA), Nicholas Riches (EA Administration), Laura Watson (Cambridgeshire and Peterborough Biodiversity Partnership, administered by the Wildlife Trust for Bedfordshire, Cambridgeshire and Northamptonshire) all of whom I thank for all their help and encouragement. Butterfly Conservation and Network Rail also maintain an interest in the results of this work.

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OBITUARY

TORBEN BJØRN LARSEN

12 January 1944 – 21 May 2015

"*Many people have contributed to giving me a rich, interesting, and largely happy life. Very few have attempted to make it miserable. I only wish everyone could be as lucky as I*". T. B. Larsen, 2003.

Torben Larsen: 'Examining things' as he named the picture before sending it. (photographer unknown)

Torben Bjørn Larsen was born in Denmark in 1944 but in 1947 moved to Greece with his parents, brother Gunner and sister Birgit, where he started his interest in butterflies. After a brief spell back in Denmark during 1950, when he lived with his grandmother, the whole family moved to India in 1951, where his father worked for UNICEF. From 1954, he attended St Columba's Missionary School in the Nilgiri Mountains of Southern India. He enjoyed his years in the tropics very much, but in 1958 he went back to Denmark to complete his secondary school studies at the Haslev Gymnasium, where he continued to grow his interests in natural history.

Torben's memories of seeing his first butterfly were of a Two-tailed Pasha butterfly, 'pickled' in alcohol by his father.

Torben did military service from 1962 to 1964 as a Lieutenant in the Royal Danish Infantry and then enrolled at the University of Copenhagen, where he completed a Masters Degree in Economics in 1970. He married first wife Kirsten Hansen in 1971 (deceased 1989) when he was working with health and population issues in Denmark,

but he left almost immediately after completing his degree to Beirut where he stayed until 1975 and published his first book on butterflies, *The Butterflies of Lebanon*. He then moved for work to London which was his home until 1984 in which year he completed his doctoral thesis on Butterflies of the Middle East (Copenhagen University). In Beirut and London, Torben worked as a senior evaluation expert on family planning programmes for the International Planned Parenthood Federation, his original career.

In 1984 Torben moved to India to work for DANIDA, the Danish government development aid agency, while continuing to study butterflies in his free time. In 1986, he became a freelance consultant in order to devote more time to his scientific interest in butterflies and travelling. A year later, in 1987, he left India and joined second wife Nancy Fee in London. Torben accompanied Nancy on her assignments as a senior UN official in AIDS programmes in The Philippines, Bangladesh and Viet Nam. He was proud of completing 50 years travelling around 50 countries and in five continents; over the years, he lived in Denmark, India, Lebanon, the United Kingdom, Botswana, the Philippines, Bangladesh, and Viet Nam. He gained fieldwork experience in Ecuador, Papua New Guinea, Viet Nam, Ghana, Nigeria, Cameroun, Sierra Leone, and Côte d'Ivoire.

Torben's main interests were the systematics, biodiversity, biogeography, evolutionary history, ecology and the conservation of African butterflies and their use as indicator species in environmental impact assessments and for ecological monitoring. African butterfly research has benefited by Torben's work helping the World Conservation Union (IUCN), the Worldwide Fund for Nature (WWF) and the World Bank (WB). During his research he had especially close relationships with the Natural History Museum (London), the Carnegie Museum in Pittsburgh, the Allyn Museum of Entomology (collection now at McGuire Centre, University of Florida), the Zoological Museum, University of Copenhagen, the Royal Africa Museum (MRAC), Tervuren, Belgium and, especially, the African Butterfly Research Institute (ABRI) in Nairobi. He also received research grants from the Carlsberg Foundation.

Between 1995 and 2004, he worked on the landmark publication *Butterflies of West Africa*, whilst continuing parallel research in other faunas and travelling widely. This book was the first published in this important region and to date the only one of its kind. It is a key reference for anyone looking to work in the African continent's butterfly fauna, which reached 4000 species counted last year. Torben was planning with fellow colleagues in Africa to publish an update of the book this year, celebrating the tenth anniversary of the first publication.

In 1996, Torben was elected President of the Association for Tropical Lepidoptera, Florida and held Research Associate status with the McGuire Centre for Butterflies and Biodiversity (University of Florida) and the Carnegie Museum (Pittsburgh). In 2011, he was appointed a Scientific Associate by the Natural History Museum (London) in recognition of his achievements and contributions to butterfly research.

Since 2010, he had been in researching and writing a comprehensive monograph on the African Skippers (Hesperiidae), a group with 580 described species and many others unknown to science. Unfortunately this work was not completed; hopefully, it

can be finished by some of his fellow researchers. His total publication list stands at more than four hundred items, including scientific and popular articles, books and monographs on different topics. Torben wrote an amazing collection of books and monographic treatments on the butterflies of Lebanon, Jordan, Oman, Yemen, the Arabian Peninsula, Egypt, southern India (Nilgiris), Bangladesh, Kenya, Botswana, and West Africa. Many of these remain as the only books covering the relevant country or region's butterflies. Twelve genera and more than 150 species or subspecies of butterflies new to science were named in these papers. The genus *Torbenia* was named after him, as were more than 20 species of insects named *larseni* or *torbeni*.

In 1979, at the request of the editor of the *Entomologist's Record*, Torben began his regular series of articles on the *Hazards of Butterfly Collecting*. The series petered out for a short while, but happily restarted and from 1989 to 2010 there has been a Hazard published every two months in the original journal. In 2004 around a hundred of these articles were published as a compilation volume of *Hazards of Butterfly Collecting*, a truly inspiring memoir of his travels studying butterflies.

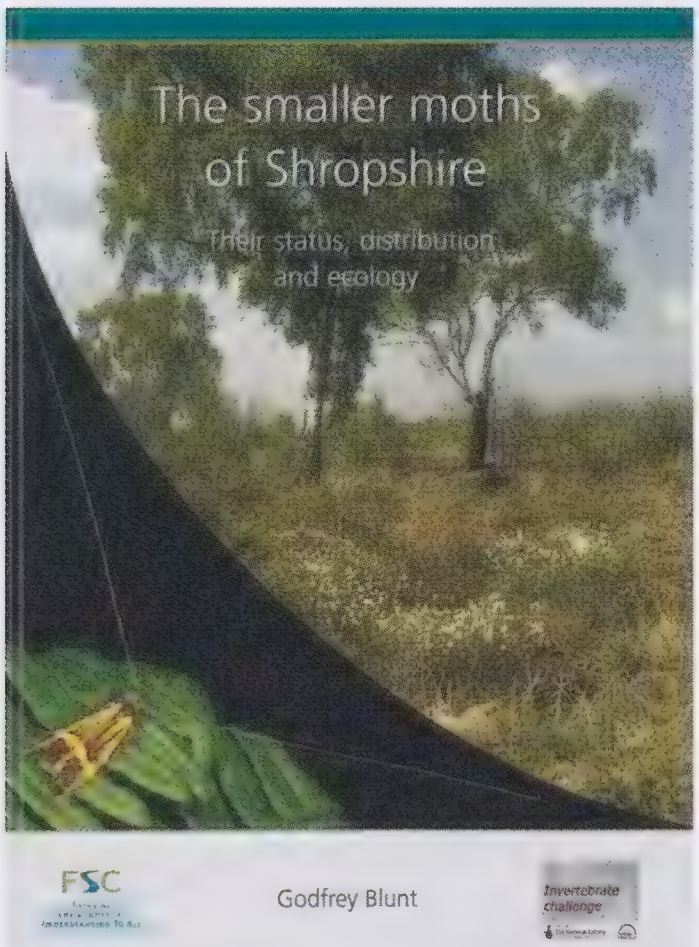
Aside from his professional achievements, it is worth reflecting on Torben's person and sense of humour, as this is what his colleagues will most miss. I first met the famous Dr Torben Larsen in London on 31 August 2007 after a five hour meeting at the Zoological Society of London. It was a great meeting and an interesting day. He wrote a short piece, almost immediately after the meeting, entitled "A funny thing happened on the way to the pub" (see *Entomologist's Rec. J. Var.* **120**: 118-119). Another anecdote is that in 2009, Torben by accident took home the Natural History Museum collection keys one day, with a huge, brick-like wooden key ring attached to it (intended to ensure that visitors did not forget to return them). His only excuse was that "Sometimes I have three of four pipes in my pocket, so I'm used to carrying bulk".

On 24 April, I received Torben's last e-mail, announcing the publication of a new genus of African skipper. I recall with great sadness that it was the only time in a decade of correspondence I saw him misspelling his own name. He died leaving not only an immeasurable legacy in our knowledge of African butterflies, but also, tantalisingly, many butterflies in his incomplete monographs awaiting formal description. Torben has left a bit of him represented in each butterfly he collected, named and has left in the collections. His kindness, sharp sense of humour and insurmountable knowledge will be sorely missed. I am forever grateful for what Torben has taught us. I not only learnt about African butterflies, conservation, biogeography, butterfly lachryphagy, but also butterflies visiting people's noses, tobacco pipes and pacemakers.

Torben is survived by Nancy, but had no children. His extensive collections have been donated to various different museums, including type material at the Lebanese University, Beirut, the African Butterfly Research Institute in Nairobi, the Natural History Museum, London, and the Zoological Museum, University of Copenhagen.

BLANCA HUERTAS
Natural History Museum, London

The smaller moths of Shropshire. Their status, distribution and ecology by **Godfrey Blunt.** 168 pp, A4 (210x297 mm), paperback, including four colour plates, ISBN: 978-1-908819-21-5, December 2014. Published by FSC Publications, Telford (*www.field-studies-council.org*) £15.



It is especially pleasing to be able to review this work. For one reason, I was born and bred in the county next-door (Staffordshire); in those far away days, when it was somewhat more acceptable for children to go out in the morning and not be seen again until tea time, I would think nothing of cycling to parts of northern Shropshire for a day's birdwatching as if it were just down the road. Later, the Long Mynd in central Shropshire was the primary source of data for my first ever published paper (an analysis of the prey of Long-eared Owls *Asio otus*). Many a happy hour was also spent on the Shropshire Mosses and Meres, mostly during outings of the Newcastle Natural History Society, although those ruddy mosquitoes … ! In those days, my early teens and a bit before, I was not "mothing" specifically; though I did have the expected schoolboy interest in butterflies, moths came later under the partial influence of the late Richard G. Warren, who made frequent "poaching" trips over the border. Warren is acknowledged, along with others on the first page of text of the new book.

A second reason for me to take pleasure in this review is the fact that the work is evidently both accurate and comprehensive. I can confirm this from first hand knowledge of the extensive checking of my own records undertaken by Godfrey Blunt. I place the highest possible emphasis on accuracy of data and I never have any problem with any sensible challenge to my own records. Blunt has also "gone the extra mile" and tracked historically dodgy records back to source – a tireseome task but usually well rewarded by the findings. For example, my own report of *Euzophera cinerosella* (Zeller) from the Wyre Forest National Nature Reserve in the early 1980s, admittedly a geographically surprising record, was accepted by Riley (1991) in his earlier work on Shropshire moths but then later rejected as an error by Riley & Palmer (1994) - it has to be said, without consultation. Blunt made the effort to contact me and discuss the facts and as a result the record is re-instated along with a note of the sex of the specimen and the fact that Lt Col. A. Maitland Emmet, was in fact responsible for the identification!

An interesting innovation is the presentation of two appendices of species not fully admitted to the county list. Of these the second is the expected list of rejects (with reasons), but the first presents those species that, whilst not yet accepted as valid, may in fact be so but are in the process of verification. This does not in any way represent laziness on the part of the author – caution in these matters is a virtue not a fault – it is far more a reflection of the combination of the sheer time that it can take to track down and examine voucher specimens combined with the desire to "get it right".

Although the micros were included in Riley (1991), I do hope that Adrian Riley will forgive me for suggesting that they did rather play second-fiddle to the macros, the coverage of which was of somewhat greater depth. This new work is, on that basis, the first truly comprehensive account of the micro moths of Shropshire, based on 18,500 records of 801 species made to the

end of May 2014. Riley's 1991 work provides the dateline for the distribution maps, with pre-1991 records shown as plus signs and records from 1991 and onwards as filled dots. Purists might lament the potential loss of historical data, but a careful read of the text suggests that so litte work was done in the county prior to the gap between the two world wars that this scarcely matters.

Key sites within all important habitat types represented in the county have been sampled, including by light trapping at night and larval searches during the daytime. Sequence and nomenclature of the species follow the new checklist (Agassiz, Beavan & Heckford, 2013); happily the Bradley and Fletcher (1979) checklist numbers are aso included for clarity). The species accounts are presented in three columns of text on the A4 pages and most are accompanied by a distribution map, which is clear and concise, indicating major rivers and urban conurbations as well as the vice-county boundary. Data on flight time of adults and larval foodplants are, happily, from Shropshire sources. The details, analyses and comments given for each species reflect the author's knowledge of the flora and climatic conditions prevailing in the county. This leads to a series of hypotheses concerning the current distribution of micro moths in Shropshire, their response to past and future habitat management and other matters.

There are remarkably few things to find fault with. There are few habitat photos or general views of well-known places, a pity in these days when colour printing has become really rather inexpensive.

No work of this nature can ever be called definitive; changes to the fauna are frequent and increasingly rapid across all of Britain. There are, also, inevitably, areas where further work is desirable. For example, some data for the oak-feeding group of *Phyllonorycter* species (*harrissella* (L.), *quercifoliella* (Zell.) and *messaniella* (Zell.) have been aggregated, reflecting the extremely time-consuming need for rearing adults of these species from their leaf mines to enable correct determination. I can bear personal witness to the efforts required for this specific task. That all said, this work is scarcely a provisional one; instead it sets an excellent standard against which future changes to the fauna may now be accurately interepreted.

COLIN W. PLANT

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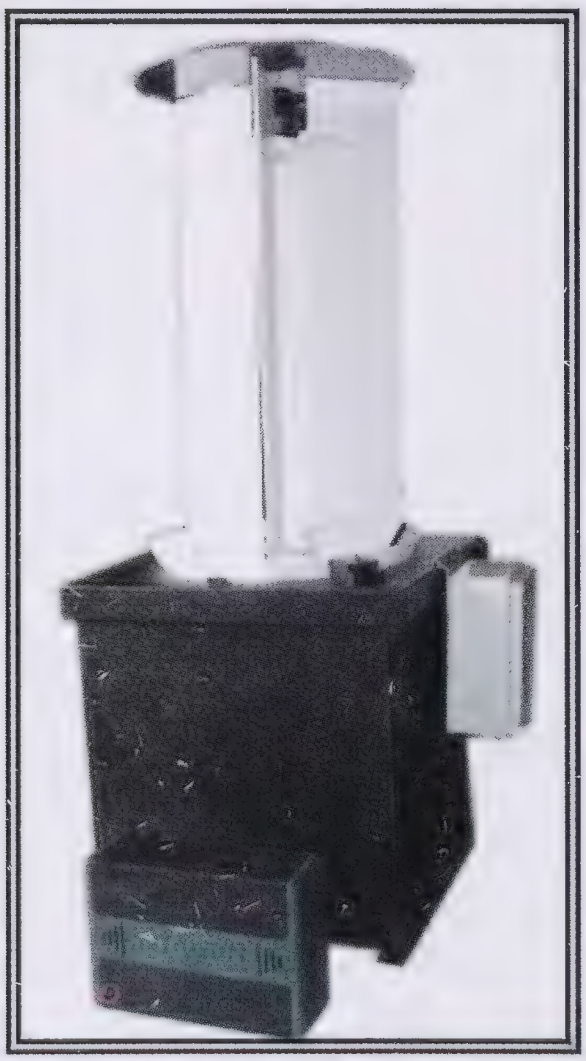

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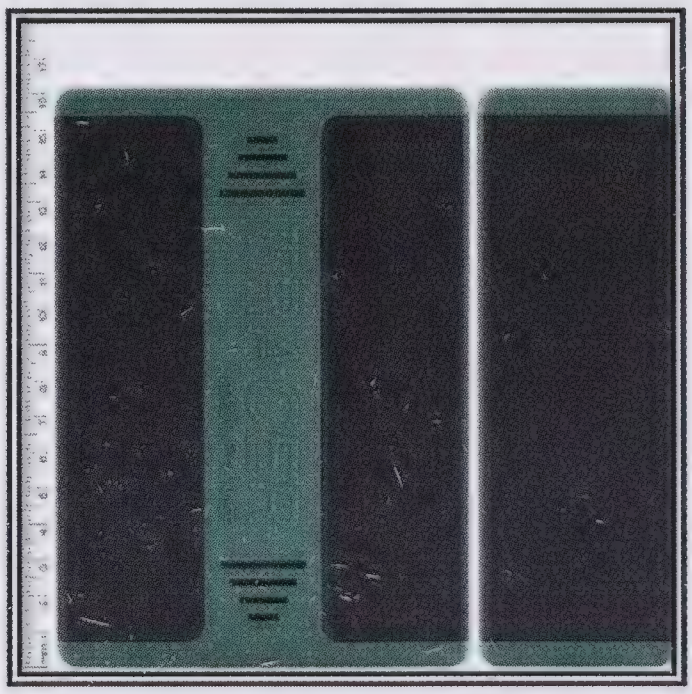

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The Entomologist's record is now printed in full colour, enabling us to accept a wider range of illustrative and interpretative material. This development has been made possible by a generous bequest by the late Andy Callow.

Front cover image of *D. aprilina* Marshalls Heath Herts 20 October 2008. © John B. Murray

DEPLANQUEIA INSCRIPTELLA (DUPONCHEL, 1836) A SISTER SPECIES OF *D. DILUTELLA* (DENIS & SCHIFFERMÜLLER, 1775) (LEPIDOPTERA: PYRALIDAE) RESIDENT IN BRITAIN

DAVID AGASSIZ

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Abstract

Deplanqueia inscriptella (Duponchel) is added to the British list and differences from the closely related *D. dilutella* (Denis & Schiffermüller) are given. The history and biology are considered and the distribution of each species is given.
Keywords. Britain, Lepidoptera, Phycitinae, *Deplanqueia*.

Introduction

At the end of last year, Patrice Leraut kindly sent me a copy of his latest book (Leraut, 2014) and I noticed that he gave two species in the genus *Deplanqueia* Leraut. He stated that both were almost everywhere in France, but those from the British Isles appeared to be *inscriptella*. It seemed surprising to me that if there are two species common in France why should there be only one in Britain. Accordingly I began dissecting specimens in my collection and I consulted Ole Karsholt in Copenhagen to see what was their situation. He and his colleague Flemming Wilhelmsen made dissections and found that both species occurred in Denmark and the whitish subbasal fascia was normally present in *dilutella* but not in the more variable *inscriptella*. The same appears to be so in the British Isles, as I found from examining specimens in the Natural History Museum, the Oxford University Museum and Bristol City Museum & Art Gallery as well as my own collection. In his original paper Leraut (2001) had suggested that both taxa were indicated in Britain by Goater (1986).

History

When Knaggs (1867) added *Pempelia subornatella* to the British list he wrote "*The synonymy of the* dilutella *in our cabinets has hitherto been so unsatisfactory that until very lately it would have been a bold thing for any British Entomologist to have attempted to decide upon the identity of either it or the species under consideration*." He then proceeded to give Stainton's translation of Zeller (1846) for the two species *Pempelia subornatella* Z. and *Pempelia adornatella* Treitschke.

Barrett (1904) writes of these two taxa "*This last form was introduced, in 1866, to our lists as a distinct species, under Duponchel's name of* subornatella, *while, both having previously been included in* dilutella, *Steph., the name* adornatella, *Tr., was resuscitated for the other supposed species. Now that it is known that both shade imperceptibly into one another, and that the food-plant and habits are identical, the present name [*dilutella*] has been resumed*."

Now that differences in the genitalia of both sexes have been detected by Leraut (2001) it was necessary to know to which one the name *dilutella* of Denis &

Schiffermüller should be applied - the original description being too vague. Leraut (2001) designated neotypes for most of the relevant names which fixes them for nomenclatorial stability.

Distinguishing the species

Deplanqueia dilutella ([Denis & Schifermüller], 1775)

= *adornatella* (Treitschke, 1834)

= *subornatella* (Duponchel, 1835)

This species (Plates 1 & 2) normally has a whitish subbasal fascia, often the ground colour of the forewing is pale grey giving a bright appearance. In Goater (1986) Plate 7 fig. 30 depicts this species, and in Manley (2015) on page 174 it is the third specimen labelled 62.015 KT

D. inscriptella (Duponchel, 1835)

This species (Plate 3) is more variable, especially in the ground colour which tends to be duller and mostly brown, it normally lacks the whitish subbasal fascia. In Goater (1986) Plate 7 fig. 29 depicts this species, and in Manley (2015) on page 174 the first two specimens refer.

Male genitalia

The phallus consists of the aedeagus, a long cylinder with projecting fingers, and within it the vesica contains one large cornutus. The vesica can be extruded by pulling on the cornutus, in *dilutella* (Plate 4, fig. 1) the cornutus is of about equal length to the aedeagus whereas in *inscriptella* (Plate 4, fig 2) it tends to be longer and the apex is drawn out. At times, the base of the cornutus is difficult to observe because of the coiled spring to which it is attached, The shape of the cornutus differs, but the angle of mounting can make this character misleading. There is also some infraspecific variation.

Female genitalia

In both species there is a pair of signa in the corpus bursae. In *dilutella* (Plate 4, fig. 3) there is a marked difference in the length of the signa bands, whereas in *inscriptella* (Plate 4, fig. 4) they are less different and the distal part ends in a sclerotised triangle. These characters are often difficult to distinguish since the signa can obscure one another unless very carefully arranged on the slide.

Life history

Detailed accounts of the larvae and their habits were provided by Barrett (1879), Barrett, (1904), Porritt (1883) and Buckler (1904) (who quotes both Barrett and Porritt), but because these taxa have been confused it is not always clear which one is being described. Barrett's larvae came from Pembroke and their identity has not been confirmed, although they would appear to be *dilutella*, the larvae were said to

Plate 1. *Delplanqueia dilutella* adult (Cornwall)

Plate 2. *Delplanqueia dilutella* adult (Burren, Ireland)

Plate 3. *Delplanqueia inscriptella* adult (Hampshire)

Plate 4. 1. *Delplanqueia dilutella* phallus; 2. *Delplanqueia inscriptella* phallus; 3. *Delplanqueia dilutella* bursae; 4. *Delplanqueia inscriptella* bursae.

be accompanied by yellow ants *Lasius flava* whereas no mention of ants was made by Porritt who was almost certainly dealing with *inscriptella*. Both species feed in a silken tube on wild thyme *Thymus polytrichus* (*T. drucei*) although Bradley & Pelham-Clinton (1967) record *D. dilutella* also feeding on *Polygala*.

Distribution

D. dilutella has been recorded from Cornwall, Ireland, Isle of Man and Scotland.

D. inscriptella has been recorded from many counties in England, also in Wales. There are some specimens whose identity is not obvious and it is likely that a clearer picture may evolve after further examination of collections.

Discussion

Further research is needed to clarify our understanding of the distribution of these species, and whether or not the early stages can be distinguished. It appears that whilst *dilutella* is more western and local, it seems more common where it occurs but this

observation is not backed by hard data. Both Barrett (1904) and Leraut (2014) mention both species as being associated with yellow ants, but Barrett was combining information about the two taxa and Leraut may have been doing the same. The differences in the genitalia, although slight, are sufficient to distinguish them as two distinct species and the DNA show two distinct clusters in the BOLD database (Mutanen, pers. comm.) supporting this thesis. There are two British specimens in that dataset, in the first cluster a specimen of *inscriptella* from Surrey and in the second a specimen of *dilutella* from Argyll. However one researcher on the Continent states that in 30% of cases he is unable with confidence to assign a specimen to the correct taxon. The examples shown, both adults and genitalia, are ones where there is no doubt; in other cases it will be more difficult to decide.

Acknowledgements

My thanks are due to Ole Karsholt (Copenhagen), František Slamka (Bratislava), Zsolt Bálint (Budapest), Ray Barnett (Bristol Museum & Art Gallery), Charles Godfray (Oxford), Patrice Leraut (Paris), Darren Mann (Oxford University Museum), Marko Mutanen (Oulu), John Langmaid, Geoff Martin & Martin Honey (Natural History Museum) and others for various assistance. John Langmaid kindly provided the excellent photographs of the adults as well as genitalia slides.

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VITULA EDMANDSII (PACKARD, [1865]) (LEP.: PYRALIDAE): IN COUNTY DURHAM

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Abstract

Vitula edmandsii (Packard, [1865]) (Pyralidae) is reported as a new species for Co. Durham VC66. This report represents the second known British occurrence of the species.

Keywords *Vitula edmandsii* (Packard), genitalia, Co. Durham, distribution

Introduction

Moth trapping has been undertaken on a regular basis at Souter Lighthouse, Whitburn, Co Durham (VC 66, O.S. grid reference NZ 408641) – a National Trust property. On Saturday 16.viii.2015, the trap was switched on and the contents were checked the following morning as usual by Nick Antcliff. In amongst the trap contents he discovered a small pyralid moth which he was unfamiliar with, and which he duly retained. After photographing the specimen he set out to identify the moth, using all the available literature to hand and viewing images on the internet. He came to the conclusion that it best fitted *Vitula edmandsii* (Plate 1). Realising the enormity of his find, he duly forwarded the images to Keith Dover the VC66 County Moth Recorder and me for our opinions.

That same day I arranged to pick up the moth and, after exhaustive searching, I also reached the opinion that it was indeed the species Nick had identified. The specimen was a male and so a slide was made of the genitalia (Plate 2). Examination of this shows without doubt that it is *Vitula edmandsii*.

Distribution

A far as I am able to ascertain, this appears to represent only the second British record of this species. The first was of a specimen taken at Spurn, Yorkshire on 8 August 1997 (Beaumont, 1998). The report of *Vitula edmandsii* by Clancy et al (1998) evidently refers to the same Spurn capture, although it is not referenced and mentions neither captor nor source.

The two reports of this species on the coastline of north-eastern Britain are perhaps unsurprising. Although originally a North American species, *Vitula edmandsii* has been found in a number of North European countries and is extending its range north-westwards. According to Beaumont (*op. cit.*) it was noted first in Europe in Germany at Bremen in 1941, then at Bad Eilsen in 1943 and Hamburg in 1949. By 1960, it had spread to Kiel and Flensburg and it reached Denmark at Harbøre in 1968. Beaumont goes on to note that it soon became established in Denmark and arrived in Norway in 1979. Speidel (1996) indicates that it was by then established in Norway and Sweden. Given the relative paucity of moth traps in the north-east of Great Britain, compared with the south-east, it may well be that other examples have gone un-noticed. Certainly

Plate 1. *Vitula edmandsii* (Packard), male. Souter Lighthouse, Durham, 16.viii.2015. a. dorsal aspect (photograph © Nick Antcliff); b. lateral; aspect (photograph © Tom Tams).

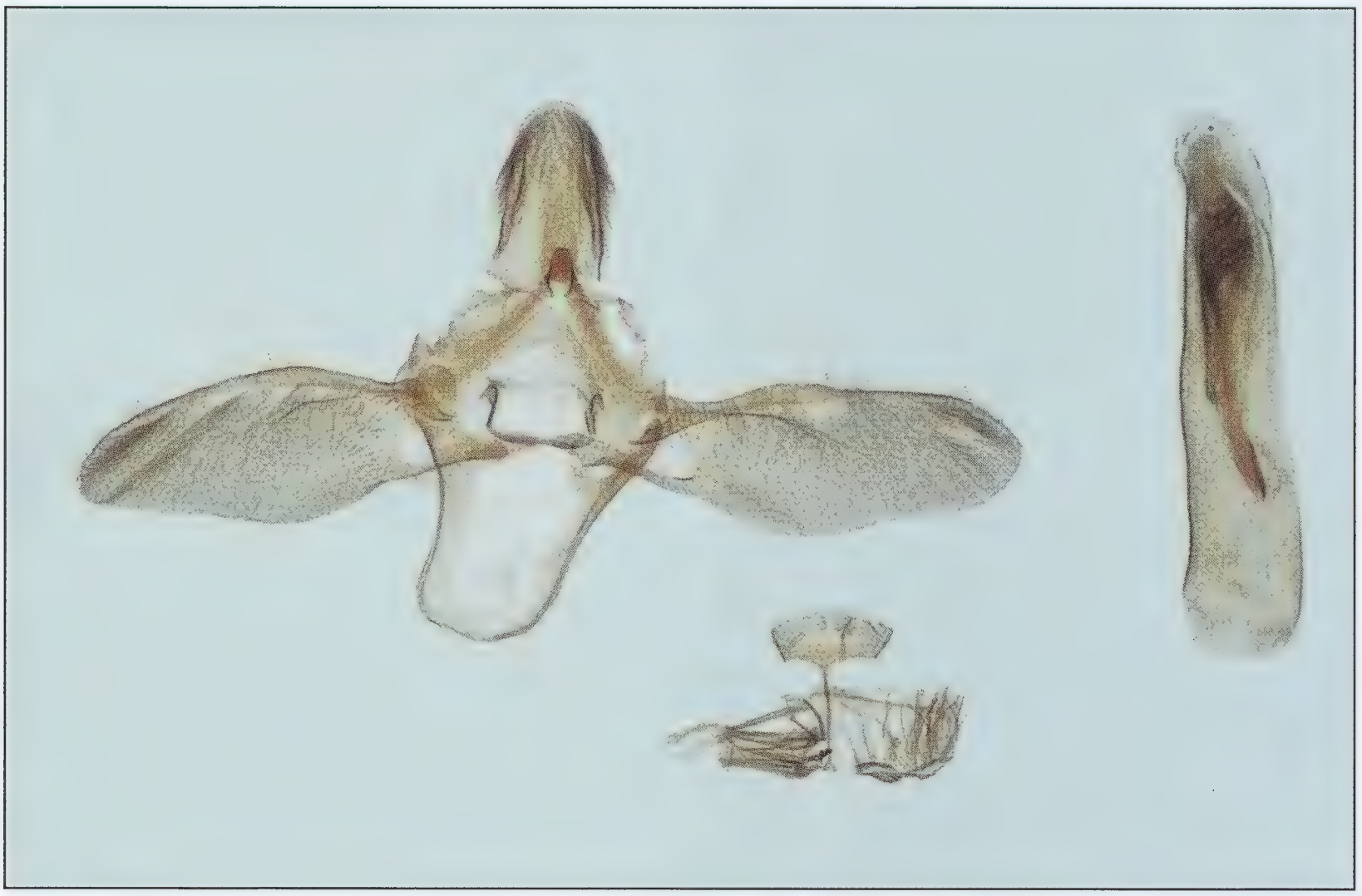

Plate 2. *Vitula edmandsii* (Packard), Souter Lighthouse, Durham,16.viii.2015. Male genitalia (photograph © Tom Tams).

it would be well worth looking again at any unidentified phycitine pyralids from this area.

Acknowledgements

Thanks to Nick Antcliff for giving me permission to document the capture of this specimen, the National Trust for allowing access to the site, Martin Honey and Alan Wheeldon for comments, Charlie Fletcher for kindly forwarding relevant material and Alan Fairclough for setting the specimen. František Slamka and Colin Plant both looked at e-mailed images of the adult moth and the genitalia slide and confirmed the identification.

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Garden Tiger *Arctia caja* (L) (Lep.: Arctiidae), a distinctive aberration caught in Shropshire

I ran my Robinson-pattern 125 Watt MV trap in my garden in Church Stretton on the night of 25.vii.2015. On opening the trap, I found what appeared to be a very worn Garden Tiger moth *Arctia caja*. The forewings were almost completely brown with just a small amount of the normal white patterning only at the shoulders. Fortunately, it flashed its hind wings and I noticed they were not the usual orange colour so the moth was put aside for more detailed examination.

The moth was quite docile and was easy to photograph in its normal resting position. (Plate 1, fig. a). It was however quite difficult to see the hindwings clearly, but a partial view revealed that and they were of a dark blue nature and the body was orange-red.

Plate 1. *Arctia caja* (L.). aberration near *splendens* Cockayne, 1949. Church Stretton, Shropshire, 25.vii.2015. a. In repose (photograph G. Wenman); b. Showing hind wings (photograph Mike Shurmer).

It so happened that later that morning I was leading a Wildlife Discovery Day at Rectory Field & Wood, an area at the foot of the Longmynd, recently handed over to the Church Stretton Council from the County Council. I was aware that several County Recorders would be there as well as my regular 'mothing' companion, Mike Shurmer and I thought they would like to see it. Mike had his camera with him and as the morning had warmed up and the moth become a little more active, he was able to get a decent photograph of what is clearly a stunning aberration. (Plate 1, fig. b).

Although Tiger Moth aberrations are well known, especially some years ago through selective breeding programmes, they are said to be quite rare in the wild. I am grateful for comments from Martin Honey who has looked at the Cockayne collection in the Natural History Museum and informs me that my specimen "comes closest to an extreme form (at least in terms of the forewing) of ab. *splendens* Cockayne, 1949 (see *Trans. S. Lond. Ent. Nat. Hist. Soc* **1947-8**: 177), in particular one of the paratypes." I have searched the Internet and have not found any photos resembling my specimen, which apart from having mostly blue underwings (not dots) surrounded by black, has two yellow flashes on the leading edges. I should be pleased to hear from anyone who has photos of any similar specimens or can offer any more information.

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The Elephant and the Wasp!

I was interested to observe, in my back garden in northern Hertfordshire, an Elephant Hawk-moth *Deilephila elpenor* (L.) trying to take off – unsuccessfully. Upon closer inspection, I noticed that a species of common social wasp (either *Vespula vulgaris* or *V. germanica*), was clinging to its back and stinging it. The attack happened on 13 July 2015 at 10.15 hours.

The social wasps are, of course, carnivorous insects, but their prey is more normally of a size that can be carried back to the nest. I was not aware that wasps tackled such large prey. The hawk moth had probably been attracted in during the previous night by my moth trap light, but did not appear to be damaged or injured in any way.

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Riband Wave *Idaea aversata* (L.) (Lep.: Geometridae) banded form frequency in Scotland

In 1999, a request for information about the frequency of the banded (typical) form of Riband Wave *Idaea aversata* as opposed to the plain form *remutata* L. in different areas of Britain gathered 25 usable datasets from 21 different vice-counties. The incidence was highest in south-east England, with 30.3% banded in a sample from East Kent VC15. The percentage of banded forms gradually declined northwards, down to 13.6% in South East Yorkshire VC61 (*Ent. Rec.* **113**: 145-151).

At that time, the only figures available for Scotland were my own from Banffshire VC94, where the banded form had not been seen. Since then, moth recording in Scotland has increased enormously, particularly after the National Macro Moth Recording Scheme was set up in 2008. All Scottish vice-counties now have their own County Moth Recorder serving increasing numbers of active observers. On top of this, modern computerised recording systems have made it so much easier to enter multiple records then instantly access, sort and extract the data when required.

Thus in 2014, knowing of my interest in this species, Nick Picozzi sent me his dataset for Riband Wave on Deeside, mainly from his garden in Banchory, Kincardineshire, VC91. This contained the first records of banded examples in north-east Scotland. In the hope of similar information from other areas, a request was placed on the Scottish Moths forum for datasets of actual counts where every Riband Wave had been determined as either plain or banded.

The response was excellent and 15 usable datasets for 11 Scottish vice-counties were obtained. These are presented in Table 1, which also includes an update of my own Banffshire figures. The results should be viewed in conjunction with the original paper (*op. cit.*), where the methodology and the interpretation of the data are described and discussed in greater detail.

As Table 1 shows, the banded form of Riband Wave appears to be absent from many areas of Scotland and scarce even where it does occur. Overall, only 13 of 2,275 individuals were banded (0.57%). Six of these were in Banchory, suggesting a localised population with a higher than usual incidence of the banded gene (2.23%). The evidence was not sufficient to calculate whether there was any significant north-south or east-west variation in the percentage of banded forms. The northernmost record of the banded form (supported by a voucher photograph) was from East Ross, VC 106. There was no suggestion from the data that the banded form was increasing, decreasing or extending its range in Scotland.

With such a low percentage of the banded form, the hypothesis of a balanced polymorphism (Ford, E. B., 1955. *Moths*. New Naturalist, Collins, London) cannot apply to Riband Wave in Scotland. When even the dominant heterozygotes are so infrequent, an undesirable double dose of the banded gene must be a very rare occurrence. Instead, it is more likely that the banded form is not favoured by natural selection in Scotland and is possibly at a disadvantage. Perhaps it is maintained there only by strays from further south.

Vice-county	Site	Years	Sample (No.)	Banded (No.)	Banded %	Observer
75 Ayrshire	Annbank, Ayr	2002-14	91	1	1.1	Nick Candlish
78 Peeblesshire	various sites	2005-14	63	-	-	Reuben Singleton
79 Selkirkshire	Galashiels	2004-14	135	2	1.5	Malcolm Lindsay
81 Berwickshire	various sites	2008-15	172	-	-	Barry Prater
84 West Lothian	various sites	2007-14	169	-	-	Mark Cubitt
91 Kincardineshire	Banchory	2008-14	269	6	2.2	Nick Picozzi
94 Banffshire	Ordiquhill	1990-2014	118	-	-	Roy Leverton
95 Moray	various sites	2007-14	234	1	0.4	Mike Taylor
96 East Inverness-shire	Kiltarlity	2010-14	233		-	Malcolm Harvey
96 East Inverness-shire	Inverness	2004-14	64	-	-	Ewan Munro
96 East Inverness-shire	various sites	2007-14	25	-	-	Mike Taylor
99 Dunbartonshire	Bearsden	2002-14	73	2	2.7	Richard Sutcliffe
105 West Ross	Carr Brae	2004-14	198	-	-	Brian Neath
105 West Ross	Drumbuie	2004-14	100	-	-	Ishbel Campbell
106 East Ross	various sites	2008-14	285		-	Margaret Currie & Andy Scott
106 East Ross	Kildary	2010-14	46	1	2.2	Nigel Richards

Table 1. The incidence of the banded form of Riband Wave *Idaea aversata* in various Watsonian vice-counties of Scotland.

As was found during the original study, actual data often conflicted with observers' opinions of the frequency of the banded form, which was sometimes wildly overestimated. Thus previous claims of up to 30% banded in some Scottish populations (East Inverness-shire and East Ross) are totally contradicted by the present figures (none in 322 and one in 331 respectively). Such overestimates are also reflected in the literature. Hausmann (2004. *The Geometrid Moths of Europe*, vol. 2. Apollo Books, Stenstrup) gives the prevalence of the banded form at 20-40% in mainland Europe, yet states 50% for Great Britain. Clancy *et al.* (2012. *Moths of Great Britain and Ireland*. Bugbook Publishing) says unbanded forms are "usually" the more frequent, implying that sometimes they are not. Manley (2015. *A Photographic Guide to the Moths of Britain and Ireland*, second edition. Bloomsbury) merely describes both forms as common. Clearly these sources do not accurately portray the situation in Scotland.

In the 1999 survey I had to write to each County Moth Recorder individually, enclosing a stamped addressed envelope for the reply. This tedious and expensive process produced no actual data for Scotland. The 2015 repeat only involved a request on the ScottishMoths forum. Not everything was better in the old days! I am grateful to everyone who responded to my appeal and I thank the observers who provided the records for taking the trouble to count their catches and distinguish the two forms.

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Strange Copulation: Meadow Brown and Red Admiral

On 28 June 2015, while leading a butterfly walk at Chertsey Meads as part of a Bioblitz organised by Surrey Wildlife Trust, a male Meadow Brown *Maniola jurtina* L. *ssp. insularis* Thompson was found in copulation with a freshly emerged female Red Admiral *Vanessa atalanta* L., close to a patch of Stinging Nettles *Urtica dioica*. The male had copulated with the female as soon as she had eclosed and before she had time to fully expand her wings (Plate 1). The pair remained *in copula* despite being handled.

Chertsey Meads is a site managed by the Runnymede branch of Butterfly Conservation as a hay meadow, with the River Thames to the north and east of the site and the River Bourne to the south. The photograph was taken at 15.35 hours at O.S. grid reference TQ0554 6592, a short distance away from the original point of discovery. The weather for the day started as cloudy in the morning with a rain shower passing just after mid-day. By 15:00 there was bright sunshine.

Plate 1. Male Meadow Brown *Maniola jurtina* L and female Red Admiral *Vanessa atalanta* L. butterflies *in copula*. Chertsey Meads, Surrey, 28 June 2015. Photograph H. E. Clarke.

Presumably the pheromones emitted by the freshly emerged female *V. atalanta* are very similar to those of female *M. jurtina*, thus attracting the male M. *jurtina*. If so, the question to be asked is why male *M. jurtina* are not more selective in choosing a mate, rather than wasting their energies on a wasted copulation between two species of different sub-families.

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Bristly Ox-tongue

Reading the article by Kevin Royles Bristly Ox-tongue *Helminthotheca echinoides* may be worth a second glance! *Antea*: 124-126) reminded me of an observation that I made on 5 July 2014 at the London Wetland Centre, Barnes, Surrey (VC 17).

I had been birding at the Centre and was walking along a path adjacent to a vegetated area outside one of the bird hides when I noticed an unusual colouration near the edge of the path. Looking closer, I could see a moth entangled in the flower buds and leaves near the top of a plant. The plant was not identified at the time but, if

my memory is correct, it was probably Bristly Ox-tongue. I managed to carefully extricate the moth without damage but it was already dead. I didn't recognise the species so tubed the specimen and looked at it in detail when I returned home. It was only then that I could identify it as a specimen of *Nemophora fasciella* (Fabricius, 1775), a UK BAP species (added to that list of species in 2007). It is regarded by Palmer, Porter & Collins (2012 *Smaller Moths of Surrey*: 77) as "a rare and very local moth" and they figure a live specimen of it on the front cover of their book. It is currently treated as a Nationally Scarce A species by Davis (2012 *A review of the status of microlepidoptera in Britain*: 7). It was the first time that the species had been recorded on site, so it was definitely worth a look at the plant.

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The larva of Light Brown Apple Moth *Epiphyas postvittana* (Walk.) (Lep.: Tortricidae) feeding on Broad Bean *Vicia faba*

On 20 June 2015 I was podding Broad Beans *Vicia faba* that I had just picked from my garden when I noticed a caterpillar inside one of the pods. I have grown Broad Beans for many years and cannot remember seeing any caterpillars inside a pod before, so I put the pod aside and after finishing the others I studied the caterpillar and thought that it could be the larva of the Carnation Tortrix *Cacoecimorpha pronubana* (Hb.), which I have found feeding on a large variety of plants in the past. I placed the caterpillar with the now opened pod in a clear plastic box hoping that it would continue to feed and pupate. Two days later it did pupate, so after a couple of weeks I checked daily to see if a moth would emerge and on 14 July a Light Brown Apple Moth *Epiphyas postvittana* was seen flying around inside the plastic box. There is a total of 92 plant species listed, worldwide, as hosts to the Light Brown Apple Moth *Epiphyas postvittana*, on the Natural History Museum web site *http://www.nhm.ac.uk/researchcuration/research/projects/hostplants/search/list.dsml?searchPageURL=browse.dsml&Family=Tortricidae&Genus=Epiphyas&Species=postvittana&Country=&sort=Family*, however the Broad Bean *Vicia faba* is not listed, so this appears to be an addition to the list.

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Cydia leguminana (Lienig & Zeller, 1846) (Lep.: Tortricidae) - first British record since 1976

A review of this species by P. J. Johnson appeared in this journal in 1978 (*Ent. Rec.* **90**: 199 – 202). The last British records known were of two specimens bred, in May and June 1976, from the bark of recently felled elms at Wicken Fen, Cambridgeshire. The recent *Checklist of the Lepidoptera of the British Isles* (Agassiz *et al.*, 2013) confirms that the species was last recorded in 1976.

Plate 1. *Cydia leguminana* (Lienig & Zeller), Bromham, Bedfordshire, 1 July 2015, leg. Peter Almond. Male genitalia. Prepared by D. Manning.

I have recently examined a number of micro-moths caught in an actinic light trap by Peter Almond in his garden at Bromham, Bedford (VC 30) on 1 July 2015. They included one specimen of *Cydia leguminana*. This has been determined by dissection, and an image of the genitalia slide is shown here (Plate 1). I am grateful to Dr John Langmaid for confirming the identification.

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Mercury vapour light bulbs – past, present and future

Most authorities consider that the Robinson pattern mercury vapour moth trap (Robinson, H. S & Robinson, P. J. M., 1950. *Entomologist's Gazette* **1**: 3-20) is the most effective of the various light traps available on the market. On suitable nights catches can be very impressive, both in numbers and in range of species. The introduction of this trap revolutionised moth collecting and recording, and its use revealed the presence of moth species that had not been detected by other methods. When I first bought a "Robinson" moth trap in about 1967, the 125-watt bulbs in use were described as "MB/U". These were still available when I stopped trapping in the late 1980s. Towards the end of that period one could also buy 125-watt bulbs for the same trap that were described as "MBFU". I resumed trapping in 2014 to find that MBFU bulbs are still available but that no-one seems to make or supply the MB/U version; indeed, staff whom I asked at one major supplier had never heard of them. The two types of bulb are shown in their descriptive labels with Plate 1, Figs 1 and 2.

MB/U and MBFU bulbs differ in two ways that would be expected to make the MBFU version less attractive to moths. First, the different shape of the MBFU bulb causes much less of the illuminated body to protrude above the trap vanes, so that less is visible to moths flying near the ground (Plate 2). Second, the MBFU bulb is lined with a fluorescent material that absorbs the UV light from the mercury discharge tube and emits red light in its place (by fluorescence, hence the F in MBFU). Thus MBFU light is more red, less blue and less rich in UV than MB/U light. The great difference in light quality is shown in Plate 2. Most insects see UV light that is invisible to humans, but they do not see the red end of the spectrum that is visible to us, so this difference between the two bulbs would be expected to make the MBFU version less attractive to insects. However, because of the great variability in moth catch numbers and variety from night to night and from site to site, it would be a major undertaking to prove or disprove this statistically.

Presumably the fluorescent lining of the MBFU bulb was introduced for safety reasons, to remove some of the harmful UV light that is emitted by the mercury discharge tube, and presumably MB/U bulbs were phased out for similar reasons of safety. Is there any evidence that MB/U bulbs harmed anybody?

A new regulation, the *Restriction of Hazardous Substances Directive (RoHS)* affects the manufacturer (but not the re-sale) of all mercury-vapour bulbs from mid-April 2015; under this Directive all Mercury Vapour bulbs, including those types in current use by British lepidopterists, are gradually being phased out.

This prompts one to ask exactly why such a draconian ban is being introduced. Is it really necessary, or is this one more example of lowering of the quality of life by Health and Safety regulation? Is the change being made in the interests of safety (as suggested by the mention of "Hazardous Substances") or of efficiency? One wonders what will we all do without mercury vapour bulbs. Quantitative and qualitative comparisons with historical catch data will become impossible. Will there be, and should there be, exemptions for long-term scientific studies?

Plate 1. MB/U bulb (left) and MBFU bulb (right).

Plate 2. MB/U (left) and MBFU (right) bulbs fitted to Robinson traps, showing how the illuminated surface of the MB/U bulb protrudes much more above the cone and vanes and the comparative colours of each after the bulbs have reached working temperatures. The MB/U bulb on the left has much bluer light (and presumably more UV) than the MBFU bulb.

Happily, it is unlikely that MV bulbs will disappear from the scene in the immediate future. Anglian Lepidopterist's Supplies, one of the main suppliers of equipment to entomologists in Britan and Europe, state on their web site (*www.angleps.com/mothtraps.php*) that "*We are informed by the bulb manufacturers that they will have 'stock that will last some years'. After this, ALS will have up to ten years stock of 125w MV bulbs (screw-thread) on current sales figures. As this ban is designed to phase out less efficient lamps such as MV, it does not affect actinic light as used in some of our moth traps.*"

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Editorial comment: Jon Clifton, the proprietor of Anglian Lepidopterist's Supplies, has reassured me (2 September 2015) that there is no danger at all of the current types of MV bulb that are advertised on their web site becoming unavailable for several years, since the ban is on manufacture, not sales and ALS have a healthy stock. Accordingly, and in spite of the fact that large orders are always welcomed by ALS, there is no need for panic-buying of large quantities of bulbs.

Editor

Possible trivoltinism in *Ectoedemia septembrella* (Stainton) (Lep.: Nepticulidae)

In the centre of Downham Market, outside the library, is an area of trees and shrubs which includes *Hypericum* 'Hidcote'. On 27.viii.2015 I was very surprised to find a tenanted mine of *Ectoedemia septembrella* as this was well outside its published date range.

Emmet (1983. *Moths and Butterflies of Great Britain and Ireland*) gives the larvae feeding in July and then October to December. Hering (1957. *Bestimmungstabellen der Blattminen von Europa*) gives July then September to December as the period of leaf-mining activity. Johansson et al (1990. *The Nepticulidae and Opostegidae of North West Europe*), state that this species is bi- or trivoltine and in the south they breed continuously.

I asked on the leaf-miner Yahoo group whether others had found tenanted mines at this time of year and John Langmaid replied that he had a very few records of tenanted mines in late August and early September from various parts of Hampshire and Surrey.

Plate 1. Larval mine of *Ectoedemia septembrella* (Stt.), Downham Market, Norfolk, 27.viii.2015, R. Edmunds.

Finding tenanted leaf mines of *Ectoedemia septembrella* in late August/early September may possibly indicate trivoltinism for this species - perhaps on a facultative basis, in response to climatic conditions. It will be interesting to see whether this phenology is restricted to southern counties in the UK and if it will become more widespread as our climate changes.

I am grateful to John Langmaid for his help.

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Nothochrysa fulviceps (Stephens) (Neur.: Chrysopidae). An unexpected flurry of records in 2015

According to data received as a result of a relatively high-profile recording exercise during the late 1980s and early 1990s, *Nothochrysa fulviceps* is a rare species in the British Isles. At the date of the most recent published distribution data (Plant, 1994. *Provisional Atlas of the Lacewings and Allied Insects (Neuroptera, Megaloptera, Raphidioptera and Mecoptera) of Britain and Ireland*. NERC), it had not been recorded here since 1943; old records were available from Bedfordshire (1820), North Lincolnshire (1889), South-west Yorkshire (1862 and 1866), Berkshire (1895), West Gloucestershire (1921) and Staffordshire (1932, 1943 and 1958).

Since then, there have been, until the present year, just three reports, from Armethwaite, Cumberland (VC 70), O.S. grid square NY54, 6 June 1995 (Steve M. Hewitt); in a layby on the A68 road south of Folly Moss, South Northumberland (VC 67), grid NY97, 27 June 2000, beaten from hawthorn scrub (Harry T. Eale) and Martlesham Heath village, East Suffolk (VC 25), grid TM24, one female on 1 August 2013 (Steve Goddard).

Plate 1. *Nothochrysa fulviceps* (Stephens), Pwll, Carmarthesnhire, 15 July 2015, I. K. Morgan.

Against this background, it seems of potential interest that there were reports of five examples of *N. fulviceps*, affecting four locations, in July (and just into August) of the present year 2015, particularly since these reports more or less coincide with moderate to high immigration activity on the part of some species of moth (Lepidoptera). These recent reports are as follows, in chronological sequence:

Bursledon, Southampton, South Hampshire (VC11), grid quare SU 41, on grass directly beneath *Quercus robur* at the edge of a section of oak-dominated ancient woodland, 3.vii.2015 (Jack Kellett); Tyrwaun, Pwll, Carmartheshire (VC44), SN 40, at mvl, 15.vii.2015 (Ian K. Morgan), **New to Wales**; Oakwood, West Sussex (VC13),

SU835074, at mvl, 19.vii.2015 (Robert Eadie); Titchwell RSPB, West Norfolk (VC 28), TF 74, at mvl in a small woodland at edge of coastal marshes, 22.vii.2015 (Paul Cobb); and finally again at Tyrwaun, Pwll, on 1.viii.2015 (Ian K. Morgan).

The species is associated with deciduous oak trees *Quercus* spp. and it is of interest therefore that the Bursledon record was made beneath such a tree. However, for Titchwell Paul Cobb informs me that "*so far as I know there is no oak whatsoever in that little wood, I certainly didn't see any, and no oak woodland (or woodland including oak) within 2½ miles, and very little in the way of hedgerow oaks*". There are oaks in the general vicinity of the location of the Welsh records, though Ian Morgan tells me that there are none within 500 yards of the actual site.

It is unclear from the limited information currently available whether these reports relate to primary immigrants, residents that have recenly established themselves as a result of immigration or longer-term residents that have simply been overlooked. That said, primary immigration is significantly less likely in Wales and together with the fact that Carmarthenshire may not be the best recorded county for lacewings this might suggest an overlooked population. On the other hand, immigration from Europe is far more likely to be the original source of any population that is established in Hampshire, Sussex or East Anglia. The 2013 report of a female from Martlesham was noted at the time as being coincident with moth movements. Sean Clancy, who maintains the definitive national record of immigrant moths, tells me that for 2015 insect immigration was at an exceptional and sustained level throughout July, with high numbers of a wide range of immigrant species including *Eublemma parva*, *Spodoptera exigua*, *Heliothis peltigera* and *Macroglossum stellatarum* in particularly unprecedented numbers. In association with these were records several exceptional immigrant rarities, most notably the second and third UK records of *Aedia funesta* and the fourth and fifth UK records of *Stegania cararia*, both these species occurring around the time of the first record of the lacewing and the fifth and sixth UK records of *Callopistria juventina* which arrived during the period between the second and third lacewing records.

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A Response to some criticisms of the 'Selection Theory' of industrial melanism

I have followed with great interest the recent fiery exchanges between Dr Geoffrey Fryer and Professor Laurence Cook in the pages of *The Linnean,* on the subject of industrial melanism. However, given the rather exasperated tone of Cook's (2014) last reply, I feel I must step into the breech and place myself firmly upon his side. This debate has been a long running one, and a great many of the arguments and hypotheses advanced today have their roots in the late nineteenth century (eg. Tutt, 1891). Yet the importance of this question has not diminished, nor is it confined to a narrow academic context. Across the world, the rise and fall of the melanic form of *Biston betularia* is

held aloft as a textbook example of natural selection in action, and is taught to millions in schools as such. It is highly important, therefore, not only that the available evidence and the conclusions drawn from it are thoroughly discussed and criticised, but that this information continues to be brought before the entomological public.

The orthodox explanation for the widespread occurrence of melanism among various species of Lepidoptera after the Industrial Revolution might conveniently be termed the "selection theory". It holds that industrial pollution, such as soot and smoke, brought about a general blackening of the environment in areas possessed of heavy industry, which caused natural selection, via differential avian predation, to favour darker variations of cryptic, day-resting species of Lepidoptera. However, Fryer (2012, 2013) claims that the hitherto obscure observations of the naturalist George Porritt (1848-1927) refute this. He argues, from Porritt's work, that many, if not all, of the species which became melanic are not exposed to predation by birds. He asserts that the rapid rate at which some species became melanic and the subsequent spread of melanic individuals into clean, unpolluted countryside, are facts which are incompatible with a selection-driven, background mismatch process. Rather, Fryer suggests that the phenomenon is better explained though the induction of melanic mutations by mutagens present in the pollution itself, and cites the experiments of Harrison and Garrett (1926). In contrast, Cook (2013, 2014) maintains that there is no evidence of melanic mutations being induced in any species, and that were this the case it would have undoubtedly been noted by breeders during the nineteenth century. Further, he contends that the notion of induction cannot be reconciled with the fact that, in *B. betularia,* with the decline of heavy industry and the subsequent decline in levels of pollution, the numbers of the dark *carbonaria* form declined while the intermediate *insularia* form temporarily increased in abundance, which is highly suggestive of the levels of pollution differentially affecting the fitnesses of the two forms. The work of Kettlwell (1973) and Majerus (1998) together, he argues, provide extremely strong evidence that industrial melanism is produced through selection-driven Darwinian evolution.

It is my firm opinion that, given due consideration of the evidence before us, it is impossible to accept that industrial melanism in the Lepidoptera was brought about by the induction of melanic mutations. Indeed, the dismantling of the "selection theory" would seem to be essential if Fryer's alternative is to be erected in its place. It is my intention here, therefore, to deal with what I see as the two major thrusts of his assault against it.

Firstly, I must address the point rolled out by Fryer again and again throughout both of his articles that differential predation by birds cannot explain the occurrence of industrial melanism because birds are simply not predators of the species involved. He writes that: " […] as Porritt made absolutely clear, some species hide by day and are not subjected to any predation by birds"; there is "scant unequivocal evidence to support it [avian predation]" (Fryer, 2012); "the species concerned were never exposed to selection"; "Porritt […] found little to suggest that moths were much taken as food by diurnal birds"; "[s]ome species which became melanic were certainly not even exposed to natural selection […] as they spend the day completely hidden from

potentially predatory birds"; "as adult moths they are almost never exposed to *any* selective predation" (Fryer, 2013). Again and again this assertion is made and it is unclear to me whether Fryer in fact subscribes to the same view as the American naturalist Waldo McAtee (1883-1962), who fiercely contended that Lepidoptera were never eaten by birds at all (Forbes, 2011). In any case, the suggestion seems to me to be nonsensical and I think it can be shown to be so purely theoretically. When we consider the colouration of British moths, the first thing which must surely strike us is how drab the overwhelming majority of them are. Most often we encounter what might well be called *natural* tones; browns, blacks, creams etc. So, why are they not often clad in the bright and gaudy colours of many of their day-flying relatives? Simply, as they are nocturnally active, they must sit still throughout the whole of the day and consequently rely upon *crypsis* for protection. Were they dazzling yellow or bright red in colour they would stand out a mile wherever they chose to rest and would undoubtedly be picked off as an easy meal by predators. Indeed, anyone who doubts the fact that moths are coloured in such a way that they are not easily seen is invited to wander into a woodland in summer and try to find as many as possible by searching alone. Run a moth trap in that same woodland by night and swarms of moths will descend. It takes years of field experience to be able to find appreciable numbers of moths by searching and, I am sorry to say, the advent of powerful MV moth traps has been to the detriment of the abilities of modern-day lepidopterists in this area, compared with our Victorian and Edwardian predecessors.

I must confess that this may not be a very convincing argument for some people, for it is certainly not an experimental one. However, it is my view that no one who has studied moths can deny that the form, pattern and colouration of their wings have been driven relentlessly by predation. Indeed, once it is accepted that birds would almost certainly eat obvious moths then all else follows; predation of moths by birds must still then occur, constantly honing and refining cryptic patterns and colours to an ever changing environment. Indeed, Fryer (2013) all but accepts this when, discussing selection experiments on *Biston betularia,* he writes, "[m]oths displayed on a background that renders them conspicuous will be taken more frequently than those displayed on a background against which they are inconspicuous, so results are always predictable."

As I say, such an abductive argument may not satisfy some, but it is bolstered by the fact that it does not stand alone. Many authors have discussed the role of predation by birds on Lepidoptera and provided evidence for it; Barrington (2012) discusses the role of avian predation on *Coenonympha tullia*; Collenette (1935) lists page after page of recorded incidences of birds predating butterflies; Majerus (1998) and, particularly, Kettlewell (1973) provide yet more evidence that this is a real phenomenon and a greatly powerful one in the evolution of butterflies and moths.

Fryer also cites some specific examples of species which are supposedly not exposed to avian predation and it is only proper to examine these individually. He asserts that the "females of *Apocheima pilosaria* and *Agriopus marginaria* [became melanic], neither of which […] are *exposed* [my italics] to predation by birds by day" (Fryer,

2013). I simply refute this outright. The females of the former are apterous and during the day hide on the trunks of trees while the males "may be found on fences and tree-trunks" (Skinner, 2009); just the sort of places which would become blackened by soot and smoke and where colour mismatches would no doubt be prominent to would-be predators. The females of *A. marginaria* have their wings much reduced in size so that they are also flightless. Skinner (2009) states, "[t]he male… is more readily found sitting on the stems of bushes and the lower branches of trees. The flightless female may be found, sometimes commonly, by searching the trunks of oak and other trees". Tutt (1902) confirms this view; "the females of *H. marginaria* [old genus] are to be found freely on tree-trunks". Again, the trunks and branches of trees are the areas which would typically become blackened by industrial pollution, as described in detail by Kettlewell (1973), and upon which any pale coloured moth would be *highly* conspicuous. Fryer (2013) then cites *Colostygia multistrigaria* which, he writes, "spends the daylight hours hidden among grasses and other vegetation and is 'absolutely out of evidence until dusk', so its colour is irrelevant to protection". Tutt (1901) states that "*Larentia multistrigaria* [old genus] usually rests at the foot of palings, &c., in its haunts, where it is almost hidden by the herbage." Typically, this moth is of a mottled grey colour which would be extremely difficult to spot among vegetation *but* were that vegetation to become darkened by industrial pollution it would be very different; anything pale would undoubtedly become prominent. Fryer (2013) asserts that the adults of *Odontoptera bidentata* are "so well hidden that they are almost entirely free from predation by birds" and again, this is simply not true. From the literature I can find two general resting positions ascribed to this species; Tutt (1901) says that "[o]ne finds the species that simulate dead leaves hanging on bushes – […] *Odontoptera bidentata*, &c. These are much less rarely taken on the trunks" while Skinner (2009) states that it is "[f]ound frequently at rest on walls and fences" and Kettlewell (1973) supports this view to an extent; "*G. bidentata* [old genus]… is normally a trunk-sitter". In either case, all of these species of moths rest during the hours of day in places which are *not* so tremendously inaccessible or well hidden that a bird engaged in searching for food could not possibly find them. Furthermore, it seems elementary that melanic individuals would most certainly possess a cryptic advantage in an industrially polluted environment, where the trunks and foliage of trees and the ground-level vegetation, among which these species rest, are blackened.

Repeatedly, Fryer denigrates the ingenuity and searching ability of birds and magnifies the cryptic patterns and hiding abilities of moths. Can he not see that the one cannot be without the other? The only reason moths possess such exquisite cryptic patterns and conceal themselves so well is because of the selective pressure of predators! Such a misunderstanding leads to absurd statements from Fryer (2013) such as "*Odontoptera bidentata* and other *cryptic* [my italics] species that are essentially immune from it [predation]"; I would be fascinated to know how Fryer proposes these species gained their cryptic colouration if they are immune from predation. The argument that moths hide during the day in such a way that they are not preyed upon significantly by birds and that, hence, selective predation by birds

could not be the "central driving force" (Cook, 2013) of industrial melanism, is simply incompatible with the evidence before us.

Fryer also writes about the speed at which some species underwent changes in colouration during and after the Industrial Revolution and asserts that the populations of many species became melanic at a rate far in excess of the traditionally cited example, *Biston betularia*. He then dismisses differential predation as effecting this change by simply stating that "[s]election takes longer". I am not a great admirer of sweeping generalisations and I think that this particular one is not justifiable under any circumstances. Selection, like all biological processes, is a dynamic one, and dependant on an enormous number of variables; for example, individual anatomy and the particular habits of the species in question. I have no doubt that the species involved did become melanic at different rates from one another, but this in no way disproves that the change was brought about by selection; indeed, it is what should be reasonably expected. Take, for example, *Apocheima pilosaria* and *Agriopis marginaria*; Fryer (2012) states that not only did these species become melanic more rapidly than *B. betularia* but the females did so quicker than the males, in some five or six years. Perhaps this is not so surprising when we consider the fact, already alluded to, that the females of these species are flightless. Perhaps their reduced mobility hinders their ability to conceal themselves during the day and, given a background which makes them highly conspicuous, the selective pressure upon the females could be slightly greater than upon the males? It must also be borne in mind that these species are on the wing (so to speak) in the winter and the deciduous trees upon which they rest are devoid of any leaves. At this time of year, bird populations are under great strain themselves to find enough food and whatever insect life is available will be most assiduously searched for. Therefore, the increased exposure against the blackened bark and branches, and the heavy selective pressure of hungry winter birds might explain the increased rapidity with which these species became melanic.

In spite of any arguments as to why this might have occurred, Fryer still contends that the change occurred too quickly to have been brought about by natural selection. Let us examine this view mathematically. Suppose there exists an isolated population of moths in an area of woodland where a dominant, melanic allele *A* occurs at a frequency of one percent. This would mean that initially something like two percent of the population would display a melanic phenotype. Then we introduce industrial pollution to our woodland. Assuming we have three different genotypes - *AA* and *Aa* which are melanic individuals and *aa* which are typical individuals – it is possible to calculate the relative proportions of each genotype (and hence, the frequency of each allele) in subsequent generations given a particular selection coefficient, *s*, against the *aa* genotype. Where the frequencies of alleles *A* and *a* are *p* and *q*, respectively, the frequency of each genotype in the next generation, after selection, is p^2/W_{mean} for *AA*, $2pq/W_{mean}$ for *Aa*, and $(q^2(1\text{-}s))/W_{mean}$ for *aa*, where W_{mean} is the mean fitness of the population $(1\text{-}sq^2)$. From this I have calculated that, given an *s* value of 0.6 for *aa*, within six generations melanic individuals would comprise approximately 85% of the entire population. In addition, I have run several simulations on the University

of Washington's excellent PopG genetic software which yielded a slightly more conservative estimate of around 90% of the population being melanic after ten generations, given an *s* value of 0.6 for *aa* (based on a population size of 1000). This computer program more realistically takes into account the effects of genetic drift. For a univoltine species of Lepidoptera each generation would translate into a single year.

The figure of *s*=0.6 (a 'selective disadvantage' of 60%) is not unreasonable, given that Kettlewell (1973) talks about regularly occurring selective advantages of 30 to 60 percent. Simply to state "[s]election takes longer" is entirely unjustifiable, for the rate at which it operates is entirely dependant on the degree of the selective advantages or disadvantages of the traits involved; that is to say, the greater the pressure of natural selection the greater the speed of the evolutionary change.

I believe that the argument advanced by Fryer in his two papers, and by many before him, that industrial melanism is due to the induction of mutations by pollution, is fundamentally based upon a dissatisfaction with the idea of its having been brought about by differential avian predation and the perceived inability of natural selection to accomplish it. I hope that I have successfully refuted these notions here and in so doing demolished the very basis for the mutagen theory.

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EIGHT NEW AND SOME RARE FOR SERBIA NOCTURNAL LEPIDOPTERA SPECIES COLLECTED AT LIGHT

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Abstract

One new genus (*Epimecia* Guenée, 1839) and eight species (*Scotopteryx ignorata* Huemer & Hausmann, 1998, *Catarhoe putridaria* (Herrich-Schäffer, 1852), *Catarhoe permixtaria* (Herrich-Schäffer, 1856), *Cucullia santonici* (Hübner, [1813]), *Epimecia ustula* (Freyer, [1835]), *Caradrina suscianja* (von Mentzer, 1981), *Apamea syriaca tallosi* Kovacs & Varga, 1969 and *Hadena drenowskii* (Rebel, 1930) new for the fauna of Serbia are reported and illustrated. Additionally, some species known in Serbia from few localities only are also reported.
Keywords: Serbia, faunistic, moths, Lepidoptera, Macrolepidoptera, Geometridae, Noctuidae.

Introduction

On 12 June 2014 I collected moths in western Bulgaria at Tchepun Hill near Dragoman (975m, N42°56'53"; E022°56'14), not far away from the border with Serbia. A most interesting capture was that of a single female *Hadena drenowskii* (Rebel, 1930) which was collected together with *Asovia maeotricaria* (Alphéraky, 1876), *Paradrymonia vittata* (Staudinger, 1892), *Apamea sublustris* (Esper, [1788]), *Sideridis lampra* (Schawerda, 1913), *Sideridis turbida* (Esper, 1790), *Conisania renati meszarosi* Varga & L. Ronkay, 1991 and many other species. The discovery of *H. drenowskii* near Dragoman suggested that there should be no reason for it not also to occur beyond the border in Serbia – a country from which is was not rteported.

Thus, in early July I visited eastern Serbia, in the Suva Planina Mountains near to the town of Niš. There is only one road high into the mountain, but this goes mostly in forest and there is no access to the open mountain meadows or the rocky crest. At an altitude of 1000m in the *Fagus* forest there was one open slope with a steep meadow, where I collected at night using three portable 12V light traps with 8 Watt black and 8 Watt actinic tubes, 160 Watt MVL with 15 Watt actinic lamps and another trap with a 15 Watt actinic lamp powered by a generator. There was an enormous number of moths in the traps, thousands of which were common migrant species, dominated by *Noctua fimbriata* (Schreber, 1759). Many other species were collected and data for the more interesting taxa are presented below. From these, *Scotopteryx ignorata* Huemer & Hausmann, 1998 and *Caradrina suscianja* (von Mentzer, 1981) are new for the fauna of Serbia. For the next three nights I collected in the district of Bela Palanka at Svrljiške Planine, Rinjska Planina, near Babin Kal and in districts of Pirot: Vidlič Mts – above Kamenolom Kitka below Crni Vrh and above Krupac Village. Near Babin Kal there was nothing really interesting. Above Kamenolom Kitka, below the summit of Crni Vrh however, there were four specimens of *Hadena drenowskii* in the traps and many other interesting species, from which *Catarhoe permixtaria* (Herrich-Schäffer, 1856) and *Apamea syriaca tallosi* Kovacs & Varga, 1969 are also new for the fauna of Serbia.

The traps were around 100 – 200 m distant from each other. The habitat is one of dry limestone slopes with *Artemisia alba*, *Syringa vulgaris* and other plants, surrounded *by Quercus-Carpinus* forest with *Acer monspessulanum* (Plate 1.).

On the last date, I collected above Krupac Village, in the district of Pirot, in a dry stony meadow near *Quercus* forest. Among the species at light *Catarhoe putridaria* (Herrich-Schäffer, 1852) was new for Serbia. It was collected there together with *C. permixtaria*. In the middle of July, on the way to Montenegro, I collected for a single night in western Serbia, near Jabuka Pass in the Prijepolje Region. Because of the rain and low temperatures I used only portable light traps in meadows on a rocky limestone area with *Juniperus*, etc. At the end of August, I collected near Koritnjak above Niška Banja and repeated collecting below Crni Vrh summit. Using Google Earth I found an easier access to Crni Vrh and there I collected at a much higher elevation and in a more open area (Plate 2.). *Cucullia santonici* (Hübner, [1813]) and *Epimecia ustula* (Freyer, [1835]) were new for the fauna of Serbia and *Hadena drenowskii* was collected again, this time together with *Cucullia formosa* Rogenhofer, 1860, which was not rare there.

Data are now presented for some of the more interesting species collected during these three trips. Many species are new for eastern Serbia and are not reported by Zečević (2002) from Timočka Krajna, a well-explored part of eastern Serbia. A small number of specimens, particularly small Geometridae which need examination of the genitalia, still remain unidentified. All specimens were collected by the author and are preserved in his collection in National Museum of Natural History, Sofia.

Inventory of species

Family Geometridae

Pseudoterpna pruinata (Hufnagel, 1767) W. Serbia, Prijepolje Region, Zvijezda, Savina Voda near Jabuka Pass, N43°22'03", E019°33'07", 1117m, 16.vii.2014, 1 male; E. Serbia, Niš Region, Suva Planina, above Bojanine Vode, 1000 m, N43°12'56"; E022°07'27", 2.vii.2014, 1 female.

Phaiogramma etruscaria (Zeller, 1849) E. Serbia, Niš Region, Suva Planina, above Bojanine Vode, 1000 m, N43°12'56"; E022°07'27", 2.vii.2014, 1 male.

Idaea trigeminata (Haworth, 1809) E. Serbia, Vidlič Mts, Pirot Region, above Krupac Village, 688m, N43°06'15"; E022°42'55", 5.vii.2014, 1 male; E. Serbia, Niš Region, Suva Planina, above Bojanine Vode, 1000 m, N43°12'56"; E022°07'27", 02.vii.2014. New species for Eastern Serbia.

Scotopteryx luridata (Hufnagel, 1767) E. Serbia, Niš Region, Suva Planina, above Bojanine Vode, 1000 m, N43°12'56"; E022°07'27", 2.vii.2014, collected together with *Scotopteryx ignorata*, 1 male, Gen. prep. 3/27.iii.2015, S. Beshkov (Plate 3a). Genitalia are illustrated here for comparison with the of next species.

Scotopteryx ignorata Huemer & Hausmann, 1998 E. Serbia, Niš Region, Suva Planina, above Bojanine Vode, 1000 m, N43°12'56"; E022°07'27", 2.vii.2014, 1 male (Plate 3c), Gen. prep. 2/27.iii.2015, S. Beshkov. Genitalia correspond exactly to these in the original description (Plate 3b). **New species for Serbia**.

Plate 1. Serbia – above Kamenolom Kitka, 870 m, collecting locality of *Catarhoe permixtaria*, *Caradrina suscianja*, *Apamea syriaca tallosi*, etc., 4.vii.2014.

Plate 2. Serbia – below the summit of Crni Vrh, 1046 m, collecting locality of *Cucullia santonici*, *Epimecia ustula* and *Hadena drenowskii*. 25.viii.2014.

Catarhoe putridaria (Herrich-Schäffer, 1852) E. Serbia, Vidlič Mts, Pirot Region, above Krupac Village, 688m, N43°06'15"; E022°42'55", 5.vii.2014, 1 male (Plate 4a), Gen. prep. 1/9.iii.2015, S. Beshkov, male genitalia on glass in Euparal (Plate 4c). **New species for Serbia**.

Catarhoe permixtaria (Herrich-Schäffer, 1856) E. Serbia, Pirot Region, Above Kamenolom Kitka, below Crni Vrh summit at 870 m, N43°10'49"; E022°38'35", 4.vii.2014, 1 male, Gen. prep. 1/24.iii.2015, S. Beshkov (Plate 4d). E Serbia, Vidlič Mts, Pirot Region, above Krupac Village, 688m, N43°06'15"; E022°42'55", 5.vii.2014, 2 females (Plate 4b), Gen. prep. 2/9.iii.2015, S. Beshkov, female genitalia on glass in Euparal (Plate 4e). **New species for Serbia**.

Catarhoe cuculata (Hufnagel, 1767) E. Serbia, Niš Region, Suva Planina, above Bojanine Vode, 1000 m, N43°12'56"; E022°07'27", 2.vii.2014, 1 male.

Euphyia frustata (Treitschke, 1828) E. Serbia, Vidlič Mts, Pirot Region, above Krupac Village, 688m, N43°06'15"; E022°42'55", 5.vii.2014, 1 male.

Hydrelia flammeolaria (Hufnagel, 1767) E. Serbia, Niš Region, Suva Planina, above Bojanine Vode, 1000 m, N43°12'56"; E022°07'27", 2.vii.2014, 1 female. Rare species in Serbia.

Triphosa sabaidiata (Duponchel, 1830) W. Serbia, Prijepolje Region, Zvijezda, Savina Voda near Jabuka Pass, N43°22'03", E019°33'07", 1117m, 16.vii.2014.

Selenia tetralunaria (Hufnagel, 1767) W. Serbia, Prijepolje Region, Zvijezda, Savina Voda near Jabuka Pass, N43°22'03", E019°33'07", 1117m, 16.vii.2014, 1 male.

Crocallis elinguaria (Linnaeus, 1758) E. Serbia, Pirot Region, above Krupac Village, 688m, N43°06'15"; E022°42'55", 5.vii.2014, 1 male.

Asovia maeoticaria (Alphéraky, 1876) E. Serbia, Niš Region, Suva Planina, above Bojanine Vode, 1000 m, N43°12'56"; E022°07'27", 2.vii.2014, 1 male (Plate 5a.); E. Serbia, Pirot Region, Above Kamenolom Kitka, below Crni Vrh, 870 m, N43°10'49"; E022°38'35", 4.vii.2014, 1 male. Very rare species for Serbia, reported not long ago as new for Serbia from the Western Stara Planina Mts (Djurić & Hric, 2013).

Nychiodes dalmatina Wagner, 1909 E. Serbia, Pirot Region, Above Kamenolom Kitka, below Crni Vrh, 870 m, N43°10'49"; E022°38'35", 4.vii.2014, 2 males and 1 female, male genitalia checked. In some articles for Serbia it is reported as *Nychiodes obscurata* (Villers, 1789) (Tomić at al, 2002, Zečević, 1996).

Charissa obscurata ([Denis & Schiffermüller], 1775) E. Serbia, Niš Region, Koritnjak above Niška Banja, 560m, N43°17'09"; E022°00'25", 24.viii.2014, 1 male and 1 female; E. Serbia, Pirot Region, near Crni Vrh top, 1046 m, N43°10'51"; E022°38'52", 25.viii.2014, 1 male and 1 female.

Charissa pullata ([Denis & Schiffermüller], 1775) W. Serbia, Prijepolje Region, Zvijezda, Savina Voda near Jabuka Pass, N43°22'03", E019°33'07", 1117m, 16.vii.2014, 5 males (Plate 5b, 5c) and 1 female, male genitalia (Plate 5d) checked, Gen. prep. 1/27.iii.2015, S. Beshkov.

Aspilates gilvaria ([Denis & Schiffermüller], 1775) E. Serbia, Pirot Region, near Crni Vrh summit, 1046 m, N43°10'51"; E022°38'52", 25.viii.2014, 5 males.

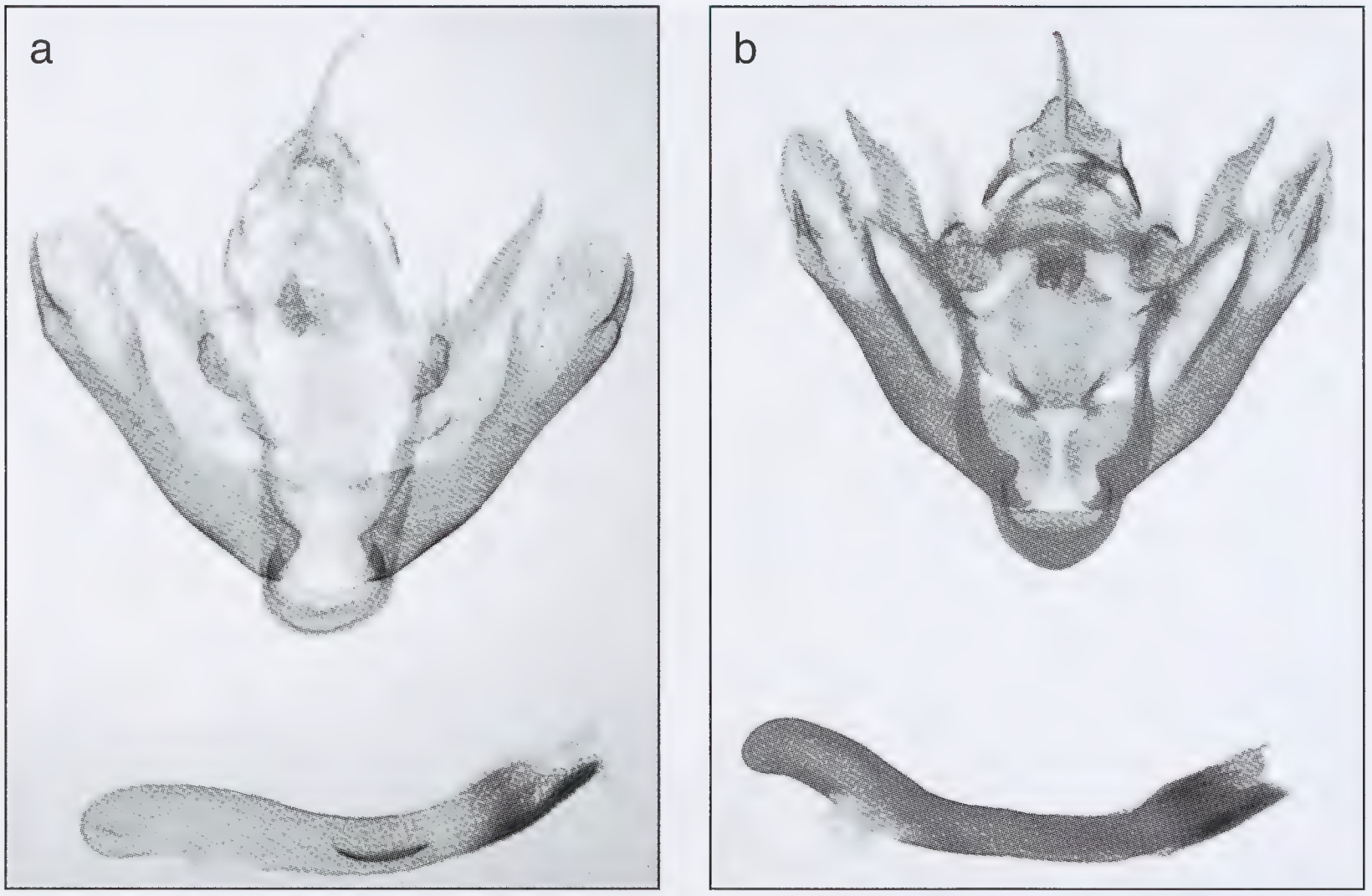


Plate 3. a. *Scotopteryx luridata*, Male genitalia. Suva Planina, above Bojanine Vode, 3/27.iii.2015; b. *Scotopteryx ignorata*, male genitalia. Suva Planina, above Bojanine Vode, 2/27.iii.2015; c. *Scotopteryx ignorata*, male. Suva Planina, above Bojanine Vode.

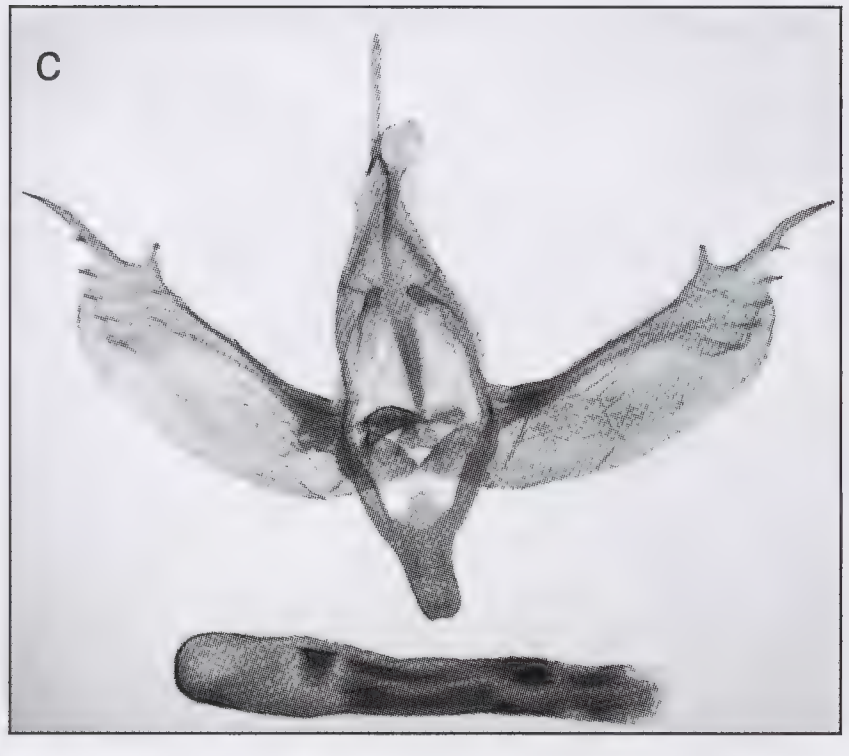


Plate 4. a. *Catarhoe putridaria,* male*;* b. *Catarhoe permixtaria,* female*,* Vidlič Mts, Pirot Region, above Krupac Village; c. *Catarhoe putridaria,* male genitalia. Vidlič Mts, Pirot Region, above Krupac Village, 1/9.iii.2015; d. *Catarhoe permixtaria,* male genitalia. Pirot Region, Above Kamenolom Kitka; e. *Catarhoe permixtaria,* female genitalia. Vidlič Mts, Pirot Region, above Krupac Village.

Plate 5. a. *Asovia maeoticaria*. Niš Region, Suva Planina, above Bojanine Vode; b. *Charissa pullata*, male, upperside. Prijepolje Region, Zvijezda, Savina Voda near Jabuka Pass; c. *Charissa pullata*, male, underside. Prijepolje Region, Zvijezda, Savina Voda near Jabuka Pass; d. *Charissa pullata*, male genitalia. Prijepolje Region, Zvijezda, Savina Voda near Jabuka Pass.

Plate 6. a. *Cucullia formosa*, male. Pirot Region, near Crni Vrh summit; b. *Cucullia santonici*, female. Pirot Region, near Crni Vrh summit; c. *Epimecia ustula*, male. Pirot Region, near Crni Vrh summit; d. *Cryphia algae*, valval tips. Niš Region, Koritnjak above Niška Banja; e. *Cryphia ochsi*, valval tips. Niš Region, Koritnjak above Niška Banja.

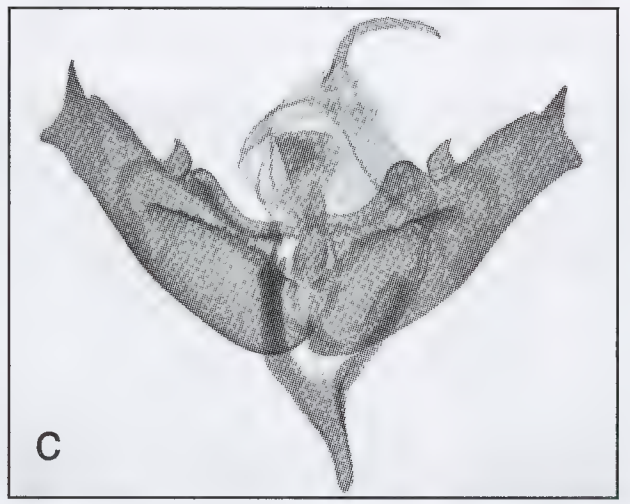


Plate 7. a. *Caradrina terrea*, male. Pirot Region, near Crni Vrh summit; b. *Caradrina suscianja,* male. Suva Planina, above Bojanine Vode; c. *Caradrina suscianja,* male genitalia. Suva Planina, above Bojanine Vode; d. *Caradrina suscianja,* everted vesica. Suva Planina, above Bojanine Vode; e. *Caradrina suscianja,* male genitalia. Suva Planina, above Bojanine Vode.

Family Lasiocampidae

Trichiura crataegi (Linnaeus, 1758) E. Serbia, Pirot Region, near Crni Vrh summit, 1046 m, N43°10'51"; E022°38'52", 25.viii.2014, 1 male, genitalia checked.

Lasiocampa quercus (Linnaeus, 1758) E. Serbia, Niš Region, Koritnjak above Niška Banja, 560m, N43°17'09"; E022°00'25", 24.viii.2014, 2 females at light.

Malacosoma castrensis (Linnaeus, 1758) W. Serbia, Prijepolje Region, Zvijezda Village, Savina Voda near Jabuka Pass, 1117m, N43°22'02"; E019°33'07", 16.vii.2014, 1 male and 1 female.

Family Notodontidae

Paradrymonia vittata (Staudinger, 1892) E. Serbia, Pirot Region, Vidlič Mts, above Kamenolom Kitka to Crni Vrh Top, 870m, N43°10'49"; E022°38'35", 4.vii.2014, abundant.

Family Erebidae

Orectes proboscidata (Herrich-Schäffer, 1851) E. Serbia, Pirot Region, Vidlič Mts, above Kamenolom Kitka to Crni Vrh summit, 870m, N43°10'49"; E022°38'35", 4.vii.2014, 4 males. According to Stojanović, Ćurčić & Nestorović, 2011) this species has only two other localities in Serbia.

Rhyparia purpurata (Linnaeus, 1758) E. Serbia, Pirot Region, Above Kamenolom Kitka, below summit of Crni Vrh at 870 m, N43°10'49"; E022°38'35", 4.vii.2014, 2 males; E. Serbia, Pirot Region, above Krupac Village, 688m, N43°06'15"; E022°42'55", 5.vii.2014, 3 males.

Chelis maculosa ([Denis & Schiffermüller], 1775) E. Serbia, Vidlič Mts, Pirot Region, above Krupac Village, 688m, N43°06'15"; E022°42'55", 5.vii.2014, 2 males; W. Serbia, Prijepolje Region, Zvijezda Village, Savina Voda near Jabuka Pass, 1117m, N43°22'02"; E019°33'07", 16.vii.2014, 3 males.

Euplagia quadripunctaria (Poda, 1761) E. Serbia, Niš Region, Koritnjak above Niška Banja, 560m, N43°17'09"; E022°00'25", 24.viii.2014, 1 male and 1 female; E. Serbia, Niš Region, Koritnjak above Niška Banja, 560m, N43°17'09"; E022°00'25", 24.viii.2014.

Schrankia taenialis (Hübner, [1809) E. Serbia, Niš Region, Koritnjak above Niška Banja, 560m, N43°17'09"; E022°00'25", 24.viii.2014, 1 female.

Calymma communimacula ([Denis & Schiffermüller], 1775) E. Serbia, Niš Region, Koritnjak above Niška Banja, 560m, N43°17'09"; E022°00'25", 24.viii.2014, 1 male.

Odice suava (Hübner, [1813]) W. Serbia, Prijepolje Region, Zvijezda, Savina Voda near Jabuka Pass, N43°22'03", E019°33'07", 1117m, 16.vii.2014, 2 males

Drasteria cailino (Lefebvre, 1827) E. Serbia, Vidlič Mts, Pirot Region, above Krupac Village, 688m, N43°06'15"; E022°42'55", 5.vii.2014, 1 male.

Catocala nymphagoga (Esper, 1787) E. Serbia, Niš Region, Suva Planina, above Bojanine Vode, 1000 m, N43°12'56"; E022°07'27", 2.vii.2014, 1 female.

Family Noctuidae

Cucullia formosa Rogenhofer, 1860 E. Serbia, Pirot Region, near Crni Vrh summit, 1046 m, N43°10'51"; E022°38'52", 25.viii.2014, 5 males (Plate 6c) and 3 females. Very rare and local species in Serbia, known only from southern areas, Gniljane (Stojanović & Ćurčić, 2011, Vasić, 202).

Cucullia lactucae ([Denis & Schiffermüller], 1775) E. Serbia, Niš Region, Suva Planina, above Bojanine Vode, 1000 m, N43°12'56"; E022°07'27", 2.vii.2014, 1 female.

Cucullia santonici (Hübner, [1813]) E. Serbia, Pirot Region, near Crni Vrh summit, 1046 m, N43°10'51"; E022°38'52", 25.viii.2014, 1 female (Plate 6b). **New species for Serbia**.

Shargacucullia prenanthis (Boisduval, 1840) E. Serbia, Niš Region, Suva Planina, above Bojanine Vode, 1000 m, N43°12'56"; E022°07'27", 2.vii.2014, 1 male.

Epimecia ustula (Freyer, [1835]) E. Serbia, Pirot Region, near Crni Vrh summit, 1046 m, N43°10'51"; E022°38'52", 25.viii.2014, 1 male (Plate 6c). **New genus and a new species for Serbia**.

Amphipyra berbera svenssoni Fletcher, 1968 W. Serbia, Prijepolje Region, Zvijezda, Savina Voda near Jabuka Pass, N43°22'03", E019°33'07", 1117m, 16.vii.2014, 1 female.

Amphipyra tetra (Fabricius, 1787) E. Serbia, Niš Region, Koritnjak above Niška Banja, 560m, N43°17'09"; E022°00'25", 24.viii.2014, 1 male.

Lamprosticta culta ([Denis & Schiffermüller], 1775) E. Serbia, Pirot Region, Above Kamenolom Kitka, below summit of Crni Vrh, 870 m, N43°10'49"; E022°38'35", 4.vii.2014, 1 male; E. Serbia, Vidlič Mts, Pirot Region, above Krupac Village, 688m, N43°06'15"; E022°42'55", 5.vii.2014, 4 males.

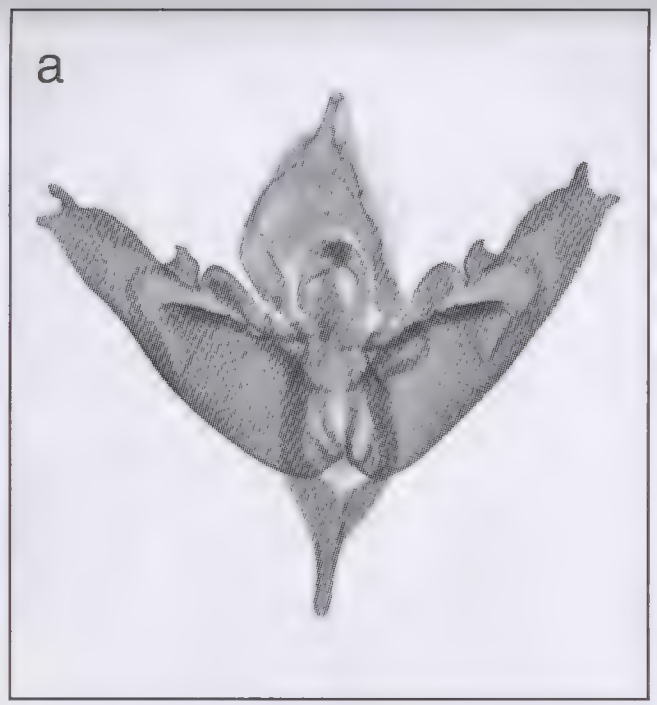
Cryphia algae (Fabricius, 1775) E. Serbia, Niš Region, Koritnjak above Niška Banja, 560m, N43°17'09"; E022°00'25", 24.viii.2014, 3 males, genitalia checked (Plate 6d).

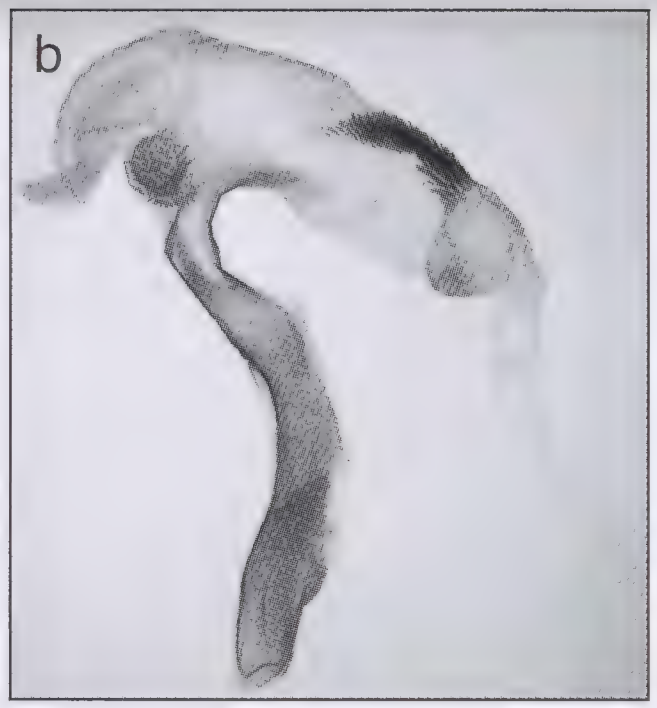
Cryphia ochsi (Boursin, 1940) E. Serbia, Niš Region, Koritnjak above Niška Banja, 560m, N43°17'09"; E022°00'25", 24.viii.2014, 2 males, genitalia checked (Plate 6e). For correct identification examination of the genitalia is recommended, it is not necessary to dissect specimens, valval tips of males are very distinctive and can be seen after brushing away a few scales.

Nyctobrya amasina (Draudt, 1931) E. Serbia, Niš Region, Koritnjak above Niška Banja, 560m, N43°17'09"; E022°00'25", 24.viii.2014, 4 males and 3 females.

Caradrina terrea Freyer, [1839] E. Serbia, Pirot Region, near Crni Vrh top, 1046 m, N43°10'51"; E022°38'52", 25.viii.2014, 4 males (Plate 7a).

Caradrina suscianja (von Mentzer, 1981) E. Serbia, Niš Region, Suva Planina, above Bojanine Vode, 1000 m, N43°12'56"; E022°07'27", 2.vii.2014, 3 males (Plate 7b) and 5 females, Gen. preps 2., 3. and 4./11.ii.2015, S. Beshkov, male genitalia (Plate 7 c & e) with everted vesicas (Plate 7d) on glass in Euparal; E. Serbia, Pirot Region, Vidlič Mts, above Kamenolom Kitka to Crni Vrh Top, 870m, N43°10'49"; E022°38'35", 04.vii.2014, 2 females and 3 males, Gen. preps, 5, 6 & 7/11.ii.2015, male genitalia (Plate 8a) with everted vesicas (Plate 8b) on glass in Euparal. **New**





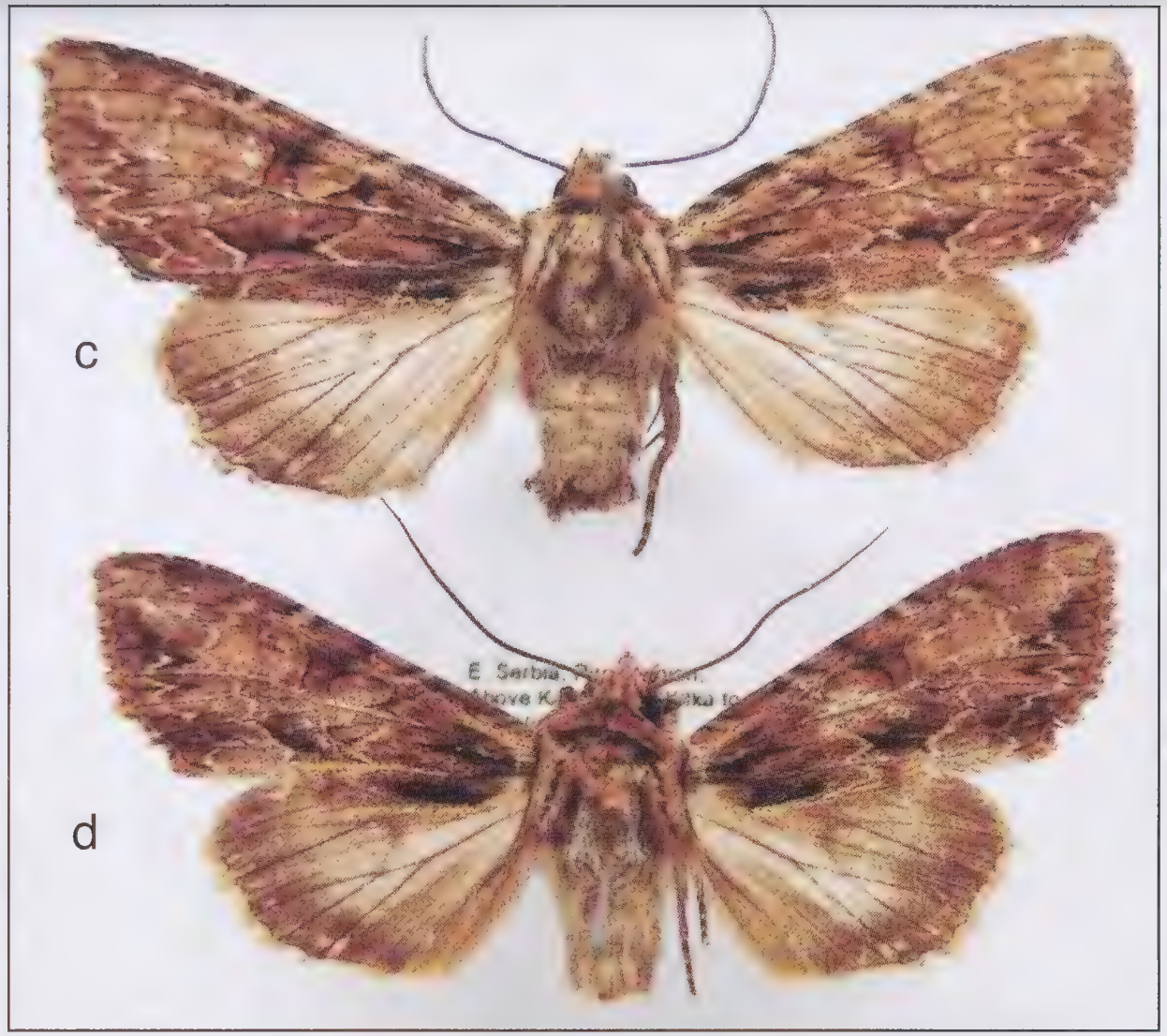


Plate 8. a. *Caradrina suscianja,* genital armatura. Pirot Region, Above Kamenolom Kitka; b. *Caradrina suscianja,* everted vesica. Pirot Region, Above Kamenolom Kitka; c. *Apamea syriaca tallosi;* d. *Apamea monoglypha*. Pirot Region, Above Kamenolom Kitka; e. *Apamea syriaca tallosi,* male genitalia with everted vesica. Pirot Region, above Kamenolom Kitka; f. *Apamea monoglypha,* male genitalia. Pirot Region, above Kamenolom Kitka.

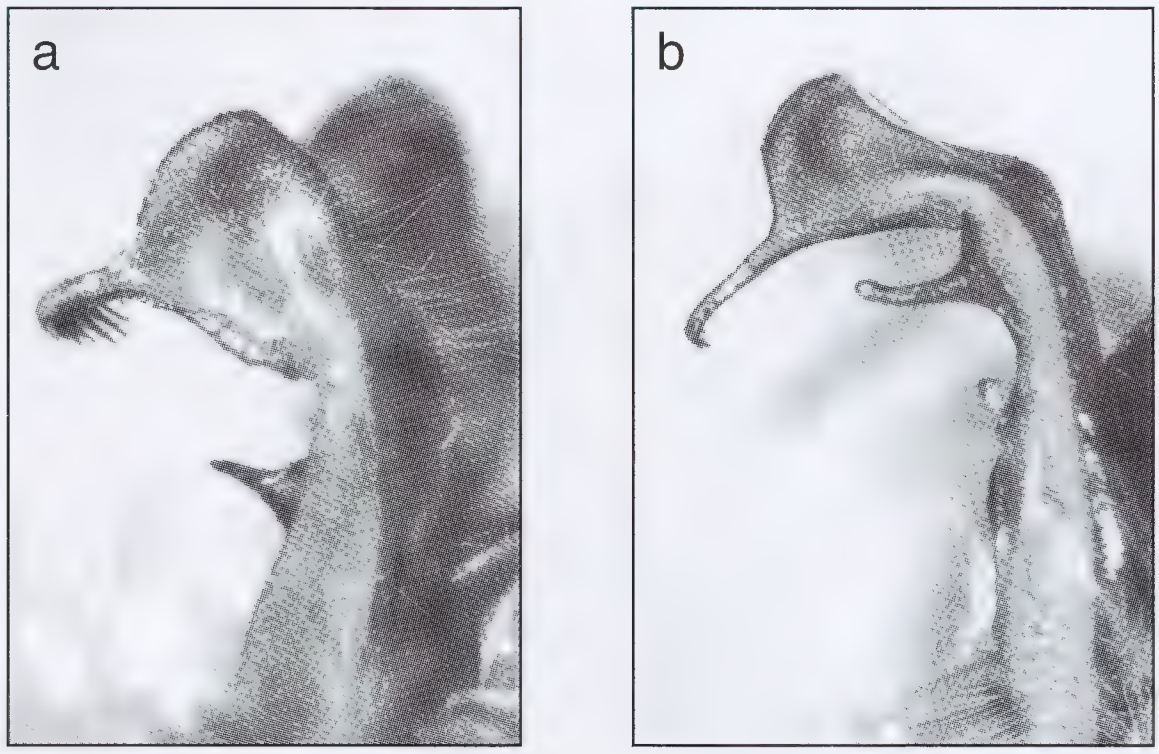


Plate 9. a. *Oligia latruncula,* valval tips. Suva Planina, above Bojanine Vode; b. *Oligia versicolor,* valval tips. Pirot Region, above Kamenolom Kitka.

species for Serbia. Closely related species to *Caradrina selini* (Boisduval, 1840) and on the Balkans identification by appearance and even by male genitalia is sometime very difficult, even speculative. Genital armature is very variable, everted vesica is not strictly specific.

Hoplodrina blanda ([Denis & Schiffermüller], 1775) E. Serbia, Niš Region, Suva Planina, above Bojanine Vode, 1000 m, N43°12'56"; E022°07'27", 2.vii.2014, 1 male.

Calamia tridens (Hufnagel, 1766) E. Serbia, Pirot Region, near Crni Vrh top, 1046 m, N43°10'51"; E022°38'52", 25.viii.2014, 7 males.

Apamea illyria Freyer, 1846 E. Serbia, Niš Region, Suva Planina, above Bojanine Vode, 1000 m, N43°12'56"; E022°07'27", 02.vii.2014, 1 male. Rare species in Serbia.

Apamea syriaca tallosi Kovacs & Varga, 1969 E. Serbia, Pirot Region, Above Kamenolom Kitka, below Crni Vrh, 870 m, N43°10'49"; E022°38'35", 04.vii.2014, 1 male (Plate 8c), Gen. prep. 2./30.iii.2015, S. Beshkov, male genitalia with everted vesica in Euparal. This specimen was collected together with one male of *Apamea monoglypga* (Hufnagel, 1766) (Plate 8d), Gen. prep. 1/30.iii.2015, S. Beshkov, male genitalia with everted vesica in Euparal (Plate 8f). **New species for Serbia**. From northern and central western Serbia, the similar *Apamea sicula* (Turati, 1909) is reported (Stojanović & Ćurčić, 2011; Zilli at al., 2009).

Apamea lithoxylaea ([Denis & Schiffermüller], 1775) E. Serbia, Niš Region, Suva Planina, above Bojanine Vode, 1000 m, N43°12'56"; E022°07'27", 2.vii.2014, 1 female.

Apamea sublustris (Esper, [1788]) E. Serbia, Niš Region, Suva Planina, above Bojanine Vode, 1000 m, N43°12'56"; E022°07'27", 2.vii.2014, 2 females; E. Serbia, Pirot Region, Above Kamenolom Kitka, below Crni Vrh summit, 870 m, N43°10'49"; E022°38'35", 4.vii.2014, 2 males.

Oligia latruncula ([Denis & Schiffermüller], 1775) E. Serbia, Pirot Region, Above Kamenolom Kitka, below Crni Vrh summit, 870 m, N43°10'49"; E022°38'35",

4.vii.2014, 1 male; E. Serbia, Niš Region, Suva Planina, above Bojanine Vode, 1000 m, N43°12'56"; E022°07'27", 2.vii.2014, 6 males. Genitalia of all male specimens (Plate 9a) checked.

Oligia versicolor (Borkhausen, 1792) E. Serbia, Niš Region, Suva Planina, above Bojanine Vode, 1000 m, N43°12'56"; E022°07'27", 2.vii.2014, 9 males; E. Serbia, Pirot Region, Above Kamenolom Kitka, below summit of Crni Vrh, 870 m, N43°10'49"; E022°38'35", 4.vii.2014, 5 males; E. Serbia, Pirot Region, above Krupac Village, 688m, N43°06'15"; E022°42'55", 05.vii.2014, 1 male. Genitalia of all male specimens (Plate 9h) checked.

Brachylomia viminalis (Fabricius, 1777) E. Serbia, Niš Region, Suva Planina, above Bojanine Vode, 1000 m, N43°12'56"; E022°07'27", 2.vii.2014, 1 male.

Cosmia affinis (Linnaeus, 1767) E. Serbia, Niš Region, Suva Planina, above Bojanine Vode, 1000 m, N43°12'56"; E022°07'27", 2.vii.2014, 1 female.

Dryobotodes monochroma (Esper, [1790]) E. Serbia, Pirot Region, near Crni Vrh summit, 1046 m, N43°10'51"; E022°38'52", 25.viii.2014, 1 male (Plate 10a). This species is reported as new for Serbia by Stojanović and Dodok (2007) from two localities – in central western and in eastern Serbia.

Sideridis turbida (Esper, 1790) E. Serbia, Pirot Region, Above Kamenolom Kitka, below Crni Vrh summit, 870 m, N43°10'49"; E022°38'35", 4.vii.2014, 1 male.

Hadena drenowskii (Rebel, 1930) E. Serbia, Pirot Region, above Kamenolom Kitka, below Crni Vrh, 870 m, N43°10'49"; E022°38'35", 4.vii.2014, 2 males (Plate 10b) and 2 females (Plate 10c); E. Serbia, Pirot Region, near Crni Vrh top, 1081 m, N43°11'04"; E022°38'55", 25.viii.2014, 1 female. **New species for Serbia**. This is the most northern locality of the species range, more than 100 km from the previously known localities.

Dichagyris nigrescens Höfner, 1888) E. Serbia, Vidlič Mts, Pirot Region, above Krupac Village, 688m, N43°06'15"; E022°42'55", 5.vii.2014, 1 male and 1 female.

Dichagyris forcipula ([Denis & Schiffermüller], 1775) E. Serbia, Vidlič Mts, Pirot Region, above Krupac Village, 688m, N43°06'15"; E022°42'55", 5.vii.2014, 1 male and 1 female.

Dichagyris signifera ([Denis & Schiffermüller], 1775) W. Serbia, Prijepolje Region, Zvijezda, Savina Voda near Jabuka Pass, N43°22'03", E019°33'07", 1117m, 16.vii.2014.

Diarsia mendica (Fabricius, 1775) E. Serbia, Niš Region, Suva Planina, above Bojanine Vode, 1000 m, N43°12'56"; E022°07'27", 2.vii.2014, 1 female.

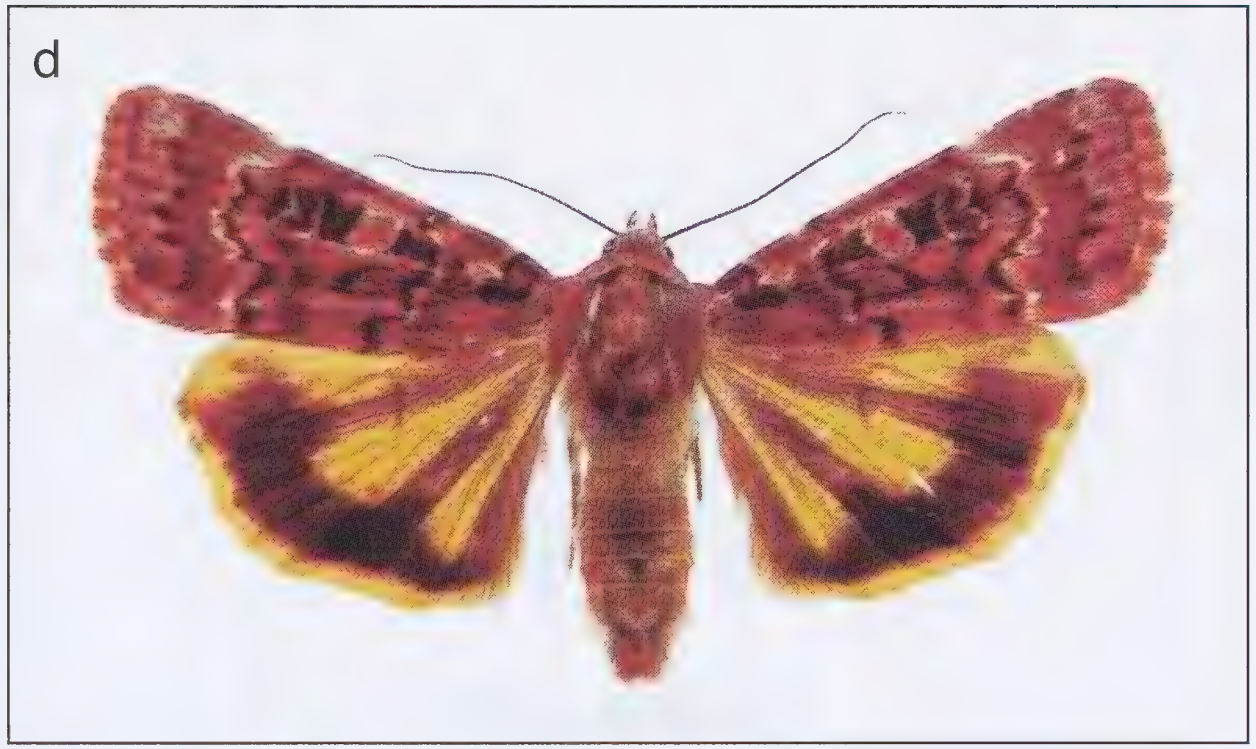
Rhyacia simulans (Hufnagel, 1766) E. Serbia, Niš Region, Suva Planina, above Bojanine Vode, 1000 m, N43°12'56"; E022°07'27", 2.vii.2014, 1 male and 1 female, female genitalia checked.

Chersotis rectangula ([Denis & Schiffermüller], 1775) E. Serbia, Niš Region, Suva Planina, above Bojanine Vode, 1000 m, N43°12'56"; E022°07'27", 2.vii.2014, 3 females; E. Serbia, Pirot Region, Above Kamenolom Kitka, below Crni Vrh, 870 m, N43°10'49"; E022°38'35", 4.vii.2014, 1 female.

a. *Dryobotodes monochroma*, male. Pirot Region, near Crni Vrh summit.

b. *Hadena drenowskii*, male. Pirot Region, above Kamenolom Kitka.

c. *Hadena drenowskii*, female. Pirot Region, above Kamenolom Kitka.



d. *Divaena haywardi*, female. Pirot Region, above Kamenolom Kitka.

Plate 10. Lepidoptera of Serbia.

Chersotis multangula (Hübner, [1803]) W. Serbia, Prijepolje Region, Zvijezda, Savina Voda near Jabuka Pass, N43°22'03", E019°33'07", 1117m, 16.vii.2014, 4 males and 1 female.

Chersotis margaritacea (de Villers, 1789) E. Serbia, Pirot Region, near Crni Vrh summit, 1046 m, N43°10'51"; E022°38'52", 25.viii.2014, 5 males.

Divaena haywardi (Tams, 1926) E. Serbia, Niš Region, Suva Planina, above Bojanine Vode, 1000 m, N43°12'56"; E022°07'27", 02.vii.2014, 2 males; E. Serbia, Pirot Region, Vidlič Mts, above Kamenolom Kitka to Crni Vrh summit, 870m, N43°10'49"; E022°38'35", 4.vii.2014, 1 female (Plate 10d). Rare speies in Serbia.

Spaelotis senna contorta (Rebel & Zerny, 1931) E. Serbia, Niš Region, Suva Planina, above Bojanine Vode, 1000 m, N43°12'56"; E022°07'27", 2.vii.2014, 5 males and 6 females; E. Serbia, Pirot Region, Above Kamenolom Kitka, below Crni Vrh, 870 m, N43°10'49"; E022°38'35", 4.vii.2014, 5 males and 2 females; E. Serbia, Pirot Region, above Krupac Village, 688m, N43°06'15"; E022°42'55", 5.vii.2014, 1 male; W. Serbia, Prijepolje Region, Zvijezda, Savina Voda near Jabuka Pass, N43°22'03", E019°33'07", 1117m, 16.vii.2014, 1 female.

Eugnorisma depuncta (Linnaeus, 1761) E. Serbia, Pirot Region, near Crni Vrh summit, 1046 m, N43°10'51"; E022°38'52", 25.viii.2014, 1 male.

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The moths of Fox Covert, Werrington, Peterborough

Fox Covert is a small copse with a number of different species of native broad-leaved trees and shrubs, including some large trees of Oak *Quercus robur* and Ash *Fraxinus excelsior*. It is on the extreme northern edge of Werrington, Peterborough, with arable farm fields and hedgerows, predominantly of Common Hawthorn *Crataegus monogyna*, between it and the next village of Glinton. Fox Covert sits in vice-county Northamptonshire and the modern administrative county of Cambridgeshire. The late J. W. (Bill) Turner who was the local moth-man resident in this area before me, told me that he had found some moths and caterpillars along nearby Foxcovert Road, but had not recorded in the copse. Some years ago I extracted records of the more interesting species from him and from his collection and notes and passed them to John Ward and Mark Hammond in their capacity as the County Moth Recorders for vice-county Northamptonshire. Apart from these records, neither the county databases for Northamptonshire nor Cambridgeshire hold any other moth records for this copse or its immediate surroundings. Enquiries since 2012 with James Fisher, Biodiversity Officer for Peterborough City Council (PCC), whose remit covers this area, indicate that the PCC has no additional records or survey results on their database. It is quite likely that no light-trapping and possibly no moth recording at all has taken place in Fox Covert until I took up the baton.

Until the building, in the 1980s, of a housing estate which comes right up to the edge of Fox Covert, this small fragment of woodland would have been simply regarded as an island of cover for foxes and other animals, and as a source of some local firewood and occasional timber. Now it has at least one additional role for which it is appreciated – as a reservoir of local wildlife which can now colonise two major nearby plantings of native trees and shrubs. One of these plantings is in the block of formerly open ground by the freshwater spring and stream on the west side of Foxcovert Road near the former level. The other is a deep hedge and shelterbelt along the cycle track around the north end of Werrington by the railway line. Both of these contain a rich mixture of native broadleaves, including such plants as Wild Privet *Ligustrum vulgare* and Poplars *Populus* spp., as well as hawthorns, Blackthorn *Prunus spinosa*, Hazel *Corylus avellana* and others of the more frequent plants in this area. Both plantings have been established for about thirty years. Conveniently situated amongst all of this, at a nearby address are, Don and Sue Rudd. Their open garden backs onto the cycleway planting and is just across the rail line from Fox Covert. One incentive for commencing moth-trapping here is that the building of a large bridge across the railway line right by Fox Covert, for cyclists and pedestrians, had been proposed so that the level crossing could be closed. School children use this route in large numbers daily between their homes in Werrington and a school in Glinton and there have been several recent accidents in which children have been killed by trains. From a wildlife point of view, there were concerns that the bridge and associated structures might cut into Fox Covert or impact on it adversely in other ways. The bridge has now been built, and was opened during 2014. It is indeed much used, but

although its foundations extend right up to the corner of Fox Covert and part of the structure overlooks the woodland floor, bright lights have not been installed so far. Wildlife already well-known from the area and flagged up for consideration before any other developments include populations of Common Frogs *Rana temporaria*, Common Toad *Bufo bufo*, Grass-snake *Natrix natrix* and various bird species, including nesting Bullfinches *Pyrrhula pyrrhula*.

My own regular light-trap site in my garden is only 3km distant and I have compiled a list of approximately 300 species of macro-moths for the garden and the surrounding neighbourhood between February 1991 and the present (Waring, P. 1992. *Butterfly Conservation News* **51**: 59-62 & **52**: 48-56; 1993. *Butterfly Conservation News* **54**: 52-61; 1994. *Ent. Rec.* **106**: 91-100; 2002. *Ent. Rec.* **114**: 165-168; 2004. *Nature in Cambridgeshire* **46**: 53-61; 2005. *Huntingdonshire Moth & Butterfly Group Annual Report* **15**: 29-39; 2012. *Huntingdonshire Moth & Butterfly Group Annual Report*). My previous house was even closer to Fox Covert; I was resident there from 1987 to 1991, but light-trapping and other methods of recording moths in the small garden were severely limited due to the close proximity of neighbouring houses and street lights.

My first light-trapping session in Fox Covert took place on 30 August 2012, when I operated a 6W actinic trap for just a couple of hours by the hedge that runs along the western side of Foxcovert Road. This was really an exercise to give my daughter and a school-friend of hers a little local adventure after dark, and to reconnoitre the area. All we recorded was a Large Yellow Underwing *Noctua pronuba* to a wine-rope and a Copper Underwing *Amphipyra pyramidea* which came to the actinic trap soon after dusk. The next trapping session, and all subsequent sessions to date (end of December 2014), have been in the garden of Don and Sue Rudd and have been all-night sessions from dusk to dawn. Their garden comprises a small lawn, with mainly exotic and evergreen plants in the borders, such that most of the moth fauna at the trap will be coming from the cycleway plantings and Fox Covert beyond the garden fence. My first session here was on 12 October 2012, using the same 6W actinic trap, but the rest of the sessions so far, on 23 February and 24 July in 2013 and in 16 February, 8 April, 29 May, 25 July and 31 August 2014 have been with a Robinson-pattern trap fitted with a 125W MB/U mercury vapour bulb. I mention just a few of the more interesting species here.

Spring Usher *Agriopis leucophaearia* – one on 16 February 2014, of interest in that it is dependent on Oaks *Quercus* spp., which are only represented in Fox Covert itself, with a very few scattered trees in Werrington village and in surrounding farm hedges. This capture effectively confirms moths are coming from Fox Covert to this trap-site. The Spring Usher is irregular in my intensively light-trapped garden, suggesting it is mainly a woodland species in this area.

Blue-bordered Carpet *Plemyria rubiginata* - one on 24 July 2013. This moth is associated with Blackthorn *Prunus spinosa* in this area. It is regularly recorded by the Blackthorn in my garden hedge in Werrington.

Small Bloodvein *Scopula imitaria* - one on 24 July 2013. Not a frequently seen species in Werrington and I have not found the caterpillar in the Peterborough area. It has been found on Garden Privet *Ligustrum ovalifolium* and Honeysuckle *Lonicera periclymenum* in the UK but only rarely. It may also feed on herbaceous plants, which it eats in captivity (Waring, Townsend & Lewington, 2009. Field Guide to the Moths of Great Britain & Ireland. British Wildlife Publishing).

Pine Hawk-moth *Hyloicus pinastri* - one worn individual on 24 July 2013. This is not the first Pine Hawk-moth I have recorded in the Werrington area. It is not frequent and I have not found the caterpillar, but local breeding is suspected. Pines *Pinus* spp. are the favoured larval foodplants in England, but larvae have also been beaten from Spruces *Picea* spp. and some other conifers.

Privet Hawk-moth *Sphinx ligustri* - one on 24 July 2013, one on 29 May 2014. This moth, the largest moth species resident in the British Isles, is well-distributed and not uncommon in the Peterborough area. My friends and I have found it in at least a dozen sites. I have found the caterpillar in my Werrington garden, feeding on Lilac *Syringa vulgaris*. It is also feeding on Privets *Ligustrum spp*. and Ash *Fraxinus excelsior,* as is the Coronet *Craniophora ligustri* which is more numerous and has been recorded at Fox Covert on 24 July 2013 and on 7 and 25 July 2014.

White Satin *Leucoma salicis* - one on 24 July 2013. This is one of the least frequent of a number of species locally which are dependent on Poplars *Populus* spp. and Willows *Salix* spp. Others recorded at Fox Covert during the above sampling are the Figure of Eighty *Tethea ocularis*, Clouded Border *Lomaspilis marginata*, Poplar Hawk *Laothoe populi*, Pebble Prominent *Notodonta ziczac*, Miller *Acronicta leporina* and Poplar Grey *Acronicta megacephala*. All of these are frequent in the light trap in my Werrington garden.

Maple Prominent *Ptilodon cucullina* - one on 25 July 2014. Formerly considered a Nationally Scarce species of south-eastern England, it is still Local and southern, but is expanding its national distribution. The larvae are certainly feeding on Field Maple *Acer campestre* locally, but probably also on other *Acer* species. The Maple Prominent is recorded regularly in my Werrington garden, in which I have planted a hedge which includes Field Maple.

Mere Wainscot *Photedes fluxa* - one on 24 July 2013. Formerly considered Nationally Scarce this is still a localised moth of southern Britain. It is well represented in East Anglia and the East Midlands, where it occurs both in wet and open wetlands, including the ditches and dykes around Werrington. The larva feeds on Small-reeds *Calamagrostis* spp.

Sycamore *Acronicta aceris* - three on 24 July 2013. This species is well established throughout Peterborough and I have found the caterpillar in Werrington, confirming local breeding. The larval foodplants here are Field Maple *Acer*

campestre and Sycamore *Acer pseudoplatanus* and probably some of the exotic *Acer* species planted in gardens and urban roadsides.

Blair's Wainscot *Lithophane leautieri* - two on 12 October 2013. This recent colonist has been well established in the Werrington area since at least 1991, when I first began light-trapping in my current garden. The caterpillars have been recorded feeding on various non-native evergreen conifers including *Cupressus macrocarpus* and allied species.

The largest catch in the moth trap so far, on 24 July 2013, which is about the peak time for moth abundance for the year, comprised 270 macro-moths of 64 species. This is a fair catch for the Werrington area in recent years. This was on a mild, calm, night which was dry till midnight, with a dusk temperature of 20°C and a minimum of 15°C for the night.

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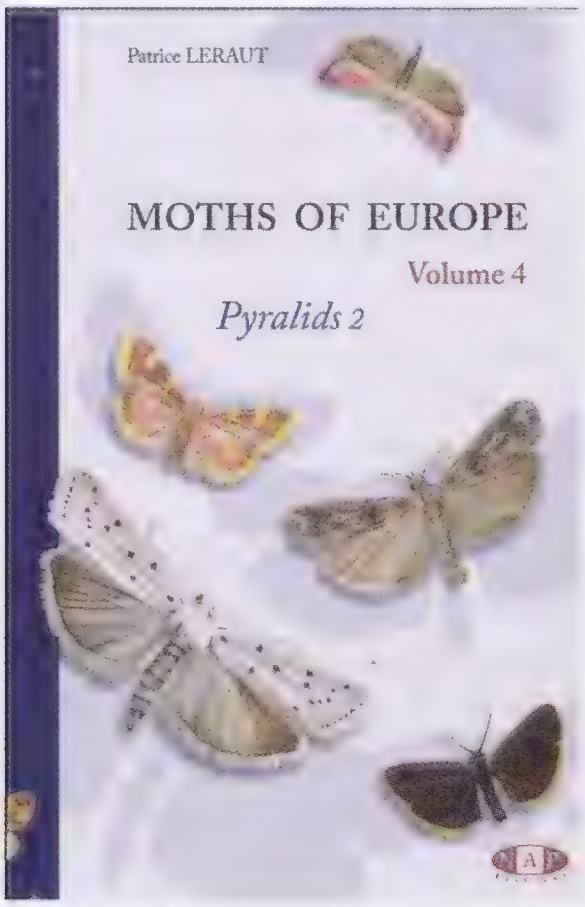
BOOK REVIEWS

Moths of Europe. Vol. 4: Pyralids 2 by **Patrice Leraut.** 130 x 205 mm, 442 pages, 69 colour plates, 190 line drawings, distribution maps. Published by N.A.P. Editions, 2014. Hardback, ISBN: 9782913688223. £69 (80€).



This book is the fourth in a proposed six volume series and is the second volume to deal with part of the Pyraloidea, now split into the families Crambidae and Pyralidae, and is a translation into English by Nicholas Flay of Leraut's *Papillons de nuit d'Europe* Vol **4** : *Pyrales* **2** (published simultaneously).

The Crambidae were dealt with in volume 3 of the series (*Moths of Europe, Volume 3: Zygaenids, Pyralids 1 and Brachodids*), which covered the subfamilies Pyraustinae, Spilomelinae, Odontiinae, Glaphyriinae, Crambinae, Schoenobiinae, Evergestinae, Cybalomiinae, Scopariinae and Acentropinae. This volume covers exclusively those pyralids in the family Pyralidae, the subfamilies Pyralinae, Epipaschiinae, Galleriinae and Phycitinae, and includes most of the species that occur in Europe.

The book features 69 colour plates illustrating 650 species in 1320 photos. In addition, there are 200 line drawings showing certain anatomical characters, in particular the genitalia of taxa that are difficult to distinguish on habitus alone. Distribution maps are provided for most of the species covered. The advertising literature states that this is a "Concise and comprehensive guide".

However, a quick look at the Fauna Europaea website reveals a list of 476 species of Pyralidae – so where do the other 174 species come from? The answer appears to be from extra-limital taxa (from North Africa, Iran, Syria, Turkmenistan, Central Asia, South Africa, China, Japan, etc.). A rather large percentage of the species covered.

The book starts with a page giving details of the number of new genera, species and subspecies that are described in the book — one new genus, seven new species (none of which are actually mentioned in the Index) and ten subspecies (also not included in the Index). This latter figure is in itself incorrect as one of three newly described subspecies of the highly variable species *Ancylosis cinnamomella*, namely *A. c. atlasica*, is not listed. In addition, mention is made of no fewer than 44 new combinations and 29 new synonymies.

A page of Acknowledgments follows but it is interesting to note that no other specialist on the European Pyraloidea is mentioned.

Next is an Introduction with various sub-headings including What is a butterfly or moth?, Where can they be observed (split into a number of habitat types), Migration and accidental introduction (it is interesting to note here the statement "Few Pyralidae are truly recognized migrants"), Collecting, Polymorphism, Preparation, How are they identified?, Nomenclature and a few lines on Moth Conservation. There is a brief list of abbreviations and a statement about the distribution maps. The Introduction ends with a 14 page list of the taxa mentioned in the book.

The bulk of the book is taken up with the species descriptions and illustrations (adult moths in colour and line drawings of both male and female genitalia), plus the distribution maps.

For the majority of species the standard entry follows the format: scientific name; Plate and figure numbers; synonyms (where present but these are not comprehensive); vernacular name (thankfully only in French); Male and female description; Variations; Closely related species; Biology; Flight-time; Distribution; and Status. For some there is also: Comment. Alongside most species is a small, diagrammatic distribution map.

The book concludes with an Index to tribes, genera and species (including page and plate references). It does not, however, include synonyms, even where they are newly synonymised in the text. This is a rather annoying omission as one assumes, as I did, that the name had been left out. It would have been far better to include them, perhaps in a different text style (e.g. *italic*). Some errors in indexing have crept in, e.g *Ancylosis cinnamomella* is listed as being on p. 392 whereas it actually appears on p. 393.

One species that I was particularly interested in for my own research was the Mallorcan endemic *Pempeliella enderleini* (Rebel, 1934). The name does not appear in the Index so I naturally assumed that it had been omitted. It was only in discussion with a colleague that I was made aware that it **was** included — but only in the text. It is to be found on p. 344, under *Pempeliella sororiella*, with the throw-away comment that it "is totally unknown to this author". It is hardly a valid reason for not including it. I wonder how many other valid names have met a similar fate.

Some information relating to the presence of certain species in the UK is out-dated, e.g. the entry for *Euzophera bigella* (Zeller, 1848) (p. 383) only mentions "reported from Norfolk and Edinburgh [Midlothian], each time in a peach stone" which is taken from Goater (1986). The species has now been recorded from the following vice counties: North Essex, East & West Sussex, South-west Yorkshire, South Devon, Isles of Scilly and Wiltshire, either as an adventive or as a presumed primary immigrant. This is information that is easy to access as it is in the public domain.

Also, some information relating to species in the UK is exaggerated, e.g. the entry for *Eccopisa effractella* Zeller, 1848 states "reported only 10 times or so in south of England (especially Kent, also Buckingham Palace!)", whereas it has actually been recorded only twice.

This probably originates as a misinterpretation of the text on the Hants moths website where it states "Very rare immigrant (less than 10 previous UK records) to the south coast of England from central Europe. One of unknown origin was recorded in the grounds of Buckingham Palace on 12 July 1995, and a genuine migrant at Dungeness, Kent on 14 September 2006, with no further records to date". However, at the time of writing, the latter record is even missing from the up-dated micro-moth distribution maps on the 'Moths Count' website. *Epischnia asteris* (= *bankesiella*) is mentioned from "southern parts of Wales", despite being correctly mapped for both Anglesey and Caernarvonshire in North Wales.

There are some terms that may be unfamiliar to readers (they were to me), e.g. ubacs (mountain slopes which receive little sunshine, especially ones facing north) and the opposite, adrets (the sides of a mountain receiving direct sunlight) (p. 15). There are also some words that have not been translated, or translated incorrectly, e.g. cantines (p. 17) instead of canteens.

There are some idiosyncrasies in the way the colour figures are referred to in the species accounts, in particular where more than one species is referred to in the text. For instance, on p. 319 under *Epischnia agnieleae* it states Pl. 38, fig. 20, 21 and Pl. 39, fig. 1 to 3, whereas those figures are *Epischnia duchateneti, E. muscidella, E. plumbella,* and two figures of *Ambluncus nervosellus*, respectively. *Epischnia agnieleae* appears not to be figured at all. There are similar cases under *Pima boisduvaliella* on p. 328, *Euzophora sordidella* on p. 386, *Ancylosis ochracea* on p. 400 and *Ancylosis bruneella* on p. 414.

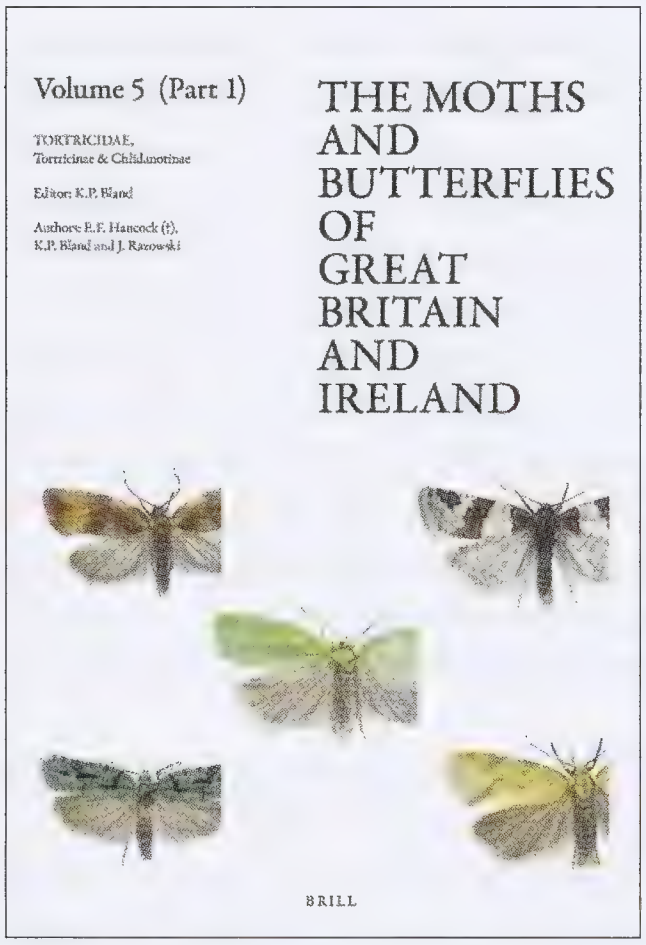
It is, however, with the photographic plates that I have my biggest complaint. To even attempt to identify pyralids on habitus one must have good, clear photographs that are reproduced well and at a magnification that would enable the features to be clearly seen. For me, the plates do not come up to scratch and are made worse by having a 'digital shadow' added. This does nothing to enhance the appearance of the moths and, in my opinion, should never have been used.

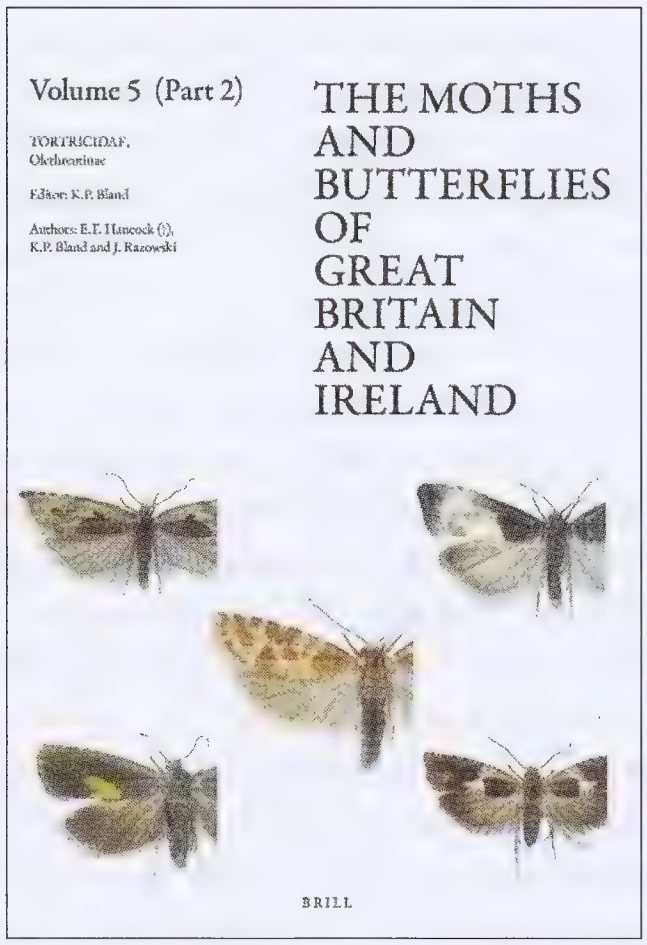
It is clear that this is very much a one man effort, as indicated also by the only Museum collection cited in the abbreviations being the Paris Museum. In some senses this is to be admired, but consultation with other European pyralid specialists might have produced an even more comprehensive publication with fewer of the issues that have been mentioned here and in reviews of this and other volumes in the series.

In a 'normal' year I would have had the opportunity to test the book 'in the field' — identifying moths in Mallorca — but I've had to make do with trying it out on the few pyralids that have turned up at light here in the UK. In that respect, it worked, so even with the various 'problems' listed above it is a good start and I'm certain that it will become a well-thumbed volume on many a bookcase. There is certainly a huge amount of information packed into this slim volume.

MARTIN R. HONEY

The Moths and Butterflies of Great Britain and Ireland Volume 5 (parts I and II) by **K. P. Bland** (Editor). 245pp. (part 1) and 377 pp. (part 2). 46 colour plates, genitalia illustrations and distribution maps. Hardbound, 297 x 210mm. £180. Published by Brill, Leiden, The Netherlands, 2014.





Many of us had given up on the idea that the series *Moths and Butterflies of Great Britain and Ireland* (*MoGBI* to its friends) would ever be completed and so the arrival of the Tortricidae section ought to be welcome. What a shame then that these two latest volumes are plagued with errors and omissions.

The colour plates of adults are photographic, which I welcome over artistic impressions and the species are shown in proportion to each other, rather than all appearing exactly the same size. However, this good start is soon spoiled. Many specimens used are so battered that they are scarcely representative – some perhaps even not recognisable at all. There are several errors: *Acleris umbrana* is probably a form of *A. cristana*; 68a and b *Cochylidia implicitana* are repeated as 71a and b incorrectly labelled *C. rupicola*; *Cydia medicaginis* is actually *Aethes williana*. There may be others – I have not looked that closely. There are no colour plates at all for four species, namely *Cnephasia pumicana*, *Cochylidia udana, Gravitarmata margarotana* and *Grapholita lobarzewskii*.

Several literature references given in the text are absent from the list at the end. The distribution maps are of variable reliability, but most are considerably out of date. A quick check of Hertfordshire species, maps for which were published seven years ago (Plant, 2008) and which are easily available both as paper and on-line, the latter at no cost, suggests that the author has not undertaken a thorough literature search. Similar comments apply to Bedfordshire and so it can be supposed that none of the maps actually reflects the true distribution of the species depicted. Closer scrutiny suggests that these maps may have been created at around the same time as the death of one of the named authors; perhaps the surviving author has simply used these without updating? This is supported by the fact that some of the maps present a different picture to that given by the text! As an example, for *Acleris effractana* the text includes a record from Ireland but the map suggests that it is absent from there. *Stictea mygindiana* is mapped for Kent even though this is a well-known and published misidentification.

The genitalia drawings are clearly those that originally appeared in Razowski (1984). A number of errors were corrected in a subsequent single volume work by Razowski (2001), but several more were overlooked and not subsequently put right until later in the two-volume work (Razowski, 2002) that is widely used by British microlepidopterists. This new work has reverted to the original erroneous drawings! *Acleris notana/ferrugana* spring to mind; this pair even has a note attached stating that the earlier drawings were incorrect – itself an incorrect statement! The genitalia of two recent additions to the British fauna, in the form of *Cochylidia udana* and *Cnephasia pumicana* are not illustrated, in spite of images being easily available in this journal and on the dissection group website (*www.dissectiongroup.co.uk*). There are other omissions and errors. To make things worse, only very rarely are the critical differences between species mentioned in the text and we are left to simply guess what is important and what might be, perhaps, an artefact arising from slide production or artistic interpretation. Overall, this has to mean that none of the genitalia drawings can be relied upon for identification purposes.

The nomenclature used is something of an enigma. The introduction tells us that the arrangement of genera "follows that most widely used in Europe" but, sadly, no references are given for what the author considers to be "the most widely used" list. This is unsurprising since it is patently not true and the nomenclature is out of tune not only with the new British checklist, but also with recent European inventories and with Fauna Europea. The *Systematic Checklist* presents only a very limited synonymy, although a more complete synonymy is given with individual species descriptions. Or is it? There are so many other errors that one cannot simply rely on any part of the text as being either correct or complete.

In terms of nomenclature, *Aphelia unitana* is retained as a good species in the *Systematic Checklist*, but in the text it is given as a subspecies of *A. paleana*. *Aphelia viburniana* is given priority over *A. viburnana* on the grounds that the latter is a *nomen nudum*. This latter suggestion was convincingly dismissed by Sattler & Tremewan (1984) and if the author of the reviewed work disagrees he should have said why; this is, after all, supposed to be *the* standard work of reference! The transfer of the species *lacunana, doubledayana, rivulana* and *aurofasciana* from *Celypha* to *Sericoris* is not accepted in any other recent checklist and again no reason is presented. *Epinotia cinereana* is given as a subspecies of *E. nisella*, but Mutanen *et al.* (2012) showed it to be a good species. *Argyroploca* is given as a generic name instead of *Argyroploce*. *Phiaris olivana* is cited as a senior synonym of *P. micana*, the latter being attributed to Hübner whereas the *World Catalogue of Insects* (Brown *et al.* 2005) attributes it to Denis & Schiffermüller and accept it as the senior name for the species. *Notocelia aquana* is given priority over *N. roborana* on the grounds that the latter is a *nomen nudum*, but this view was also dismissed by Sattler & Tremewan (1984) and my comments above apply equally here. *Epiblema cirsiana* is given as a form of *E. scutulana* despite its specific status being upheld in Fauna Europaea and other lists. There are likely to be other errors so that in this area too the entire work is rendered unreliable.

Bradley (2000) checklist numbers are given, but numbers allocated in the new British checklist (Agassiz *et al.* 2013) are not. There are several spelling errors in species names (e.g., *Lobesia abscisana* is wrong in the checklist, though correct in the main systematic section). The year when the species was added to the British list is given for some species, but not for others whilst for some it is simply wrong (e.g., *Pammene aurita* is given as 1958 when in fact it was 1943). The *Systematic Checklist* in volume 2 includes Endotheniini as a Tribe within the Olethreutinae, but a mere half dozen pages later the key to tribes of the Olethreutinae makes no mention whatsoever of Endotheniini. Two pages further and we see that genus *Endothenia* is included in Tribe Olethreutini. In the text, the life-histories of many species appear to have been updated since the standard work of Bradley, Tremewan & Smith (1973 & 1979), but a great many more have not – which is a considerable insult to those hard-working chaps (and chapesses) who have

painstakingly studied the moths and then published their results in peer-reviewed and widely available journals, including this one.

Overall, this is a shoddy piece of work, plagued with errors and omissions that render the whole work unreliable. Of the three named authors, one died nearly twenty years ago and another contributed only by allowing his genitalia drawings to be included and so this leaves a single author, who happens also to be the Editor. This is probably the problem – the work is a "one-man show" and has clearly suffered from a lack of *independent* editing and a complete absence of peer review. No attempt has been made to update the distribution maps by contacting the various County Moth Recorders. No discussion has been had with members of the Dissection Group, which is a great pity since not only could errors have been pointed out but in many cases far better illustrations of the genitalia could have been provided.

Only those people who don't need the book in the first place will be able to sort the wheat from the chaff, which surely defeats the entire object of the exercise.A standard work on British Isles Tortricidae we do *not* have and owning a copy of these two volumes is more of an embarrassment than a necessity. At the advertised price I cannot even recommend you buy it for its curiosity value. Let us hope that the critical comments made here, and also by other reviewers elsewhere, are taken on board by Brill, whose record of scientific publishing is otherwise exemplary. Just to add insult to injury, the two volumes are not even the same size as the previous nine, being a good inch taller and slightly wider. This is probably the only issue that can be blamed on the publishers, whose record of entomological publishing is otherwise outstanding. In the interest of ensuring that mistakes in these volumes are widely publicised, so that inaccurate records do not creep into the recording system, it is strongly recommended that a list of corrections should be published and distributed free of cost to purchasers of this work.

COLIN W. PLANT

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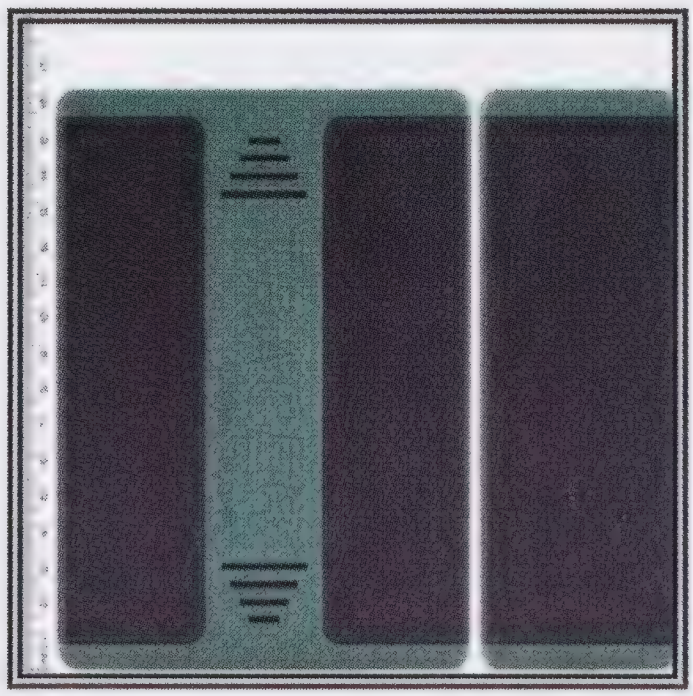

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The Entomologist's record is now printed in full colour, enabling us to accept a wider range of illustrative and interpretative material. This development has been made possible by a generous bequest by the late Andy Callow.

Front cover image of *D. aprilina* Marshalls Heath Herts 20 October 2008. © John B. Murray

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MICROLEPIDOPTERA REVIEW OF 2014

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Abstract

Noteworthy records of microlepidoptera collected during 2014 are summarised, including four species new to the British Isles and numerous new vice-county records.

Introduction

Surprisingly, 2014 was the warmest year on record for the UK. Surpisingly, because it did not seem like that at the time but, with the exception of August, every month was warmer than the long-term average and, with an annual average temperature of 9.9°C, 2014 exceeded even 2006 for overall temperature. Perhaps the reasons that it did not seem so warm were partly that there were no significant heat-waves, just consistent warmth, and it was also considerably wetter than usual, the fourth wettest year since 1910. January and February were very wet indeed but really cold snowy weather was rare and there were fewer air-frosts than any year since 1961. Summer storms were quite significant, with localised flooding in mid July across southern England, and the remnants of hurricane Bertha bringing dramatic rain-storms to NE Scotland in mid August.

As always there were regional variations, with the warmest anomaly in East Anglia and south-east England. The South-west, Wales and Northern Ireland were less warm, although still just above the low-term mean. The places which saw the most extra rainfall were the south of England, the south-west Midlands and eastern Scotland around Angus and Kincardine.

It is pleasing to report the occurrence of several new species to each country and four which have never been recorded anywhere in the British Isles before. The star species was *Tetramoera langmaidi* Plant, originally found in Southsea in 2008 and more recently in Hertford. This colourful species was not identifiable initially but after a male and female were found and dissected in Hertford it was determined to be a previously un-described species. It has now been named and described but its origin is unclear. Its closest relatives are found in south-east Asia, Australasia and southern Africa and it is so striking in appearance that it is unlikely to have been over-looked. Perhaps it is a recent adventive but there are no clues as to how it may have been introduced to the British Isles, nor why it has been found in just two rather distant places. Its likely foodplant is bamboo but it cannot easily be tied to the introduction of such plants in either Southsea or Hertford.

The other newcomers have all been found in London. *Phyllonorycter pastorella* (Zeller) has been found mining the leaves of various long-leaved *Salix* species in Buckingham Palace, St James Park and Battersea. It is a European species and seems

likely to have spread to England by itself. Perhaps it will now spread from London, in the manner of *P platani* (Staudinger). *Choreutis nemorana* (Hübner) has been found feeding on the leaves of fig trees (*Ficus carica*) in Hyde Park. Figs are now being widely grown in southern England and maybe the moth has been introduced with nursery material. Alternatively it has flown by itself to England and has found suitable food and climate in the London basin. It may also be expected to spread to other fig trees, although at present it is very restricted even in Hyde Park. *Clepsis dumicolana* (Zeller) feeds on ivy (*Hedera helix*) and has been found in Chelsea. Originally a southern European species, it has recently spread north, reaching Belgium and The Netherlands, and so its occurrence here seems to be part of this range expansion.

Ectoedemia hannoverella (Glitz) has been recorded as new to Wales in VC51, a very long way from its other sites in East Anglia and Kent. Perhaps it has a wider distribution but has been overlooked, or maybe this is a genuine chance dispersion to a new area. The other new species to Wales, namely *Epinotia nigricana* (Herrich-Schäffer), is certainly likely to be a previously overlooked species, now found as more micro recording is being carried out in Wales. For Scotland, *Evergestis extimalis* (Scopoli), which was found in Caithness, and *Sitochroa palealis* ([Denis & Schiffermüller]), from Fair Isle, are surely migrants, whereas the other two newcomers, *Eudemis profundana* ([Denis & Schiffermüller]) and *Ancylis diminutana* (Haworth) have been found in the extreme south-west of the country and are probably just pushing their range northwards from northern England.

Ireland has certainly been under-recorded in the past but is now subject to much more attention and, following a recent trend, has accumulated several new species. *Yponomeuta rorrella* (Hübner) is known for its migratory tendencies and *Blastobasis vittata* (Wollaston) is one of the newer arrivals of its genus, all of which are known for their dispersive abilities. However, *B vittata* is not very distinctive and could easily have been overlooked. The other three new arrivals to Ireland, namely *Stigmella roborella* (Johansson), *Hellinsia osteodactylus* (Zeller) and *Pammene aurita* Razowski are certainly likely to be previously overlooked residents.

The very large number of new Vice-county records recorded here are both a testament to the hard work of so many micro-lepidopterists and to the tendency of the moths to spread their range as climate changes and foodplants become available. Even so, it is difficult to understand some of the new records. Whereas it is interesting to see a species such as *Acleris abietana* (Hübner) continuing to extend its range into southern England, what can be made of the sudden appearance of *Ethmia terminella* Fletcher in Cheshire, so far from its usual haunts in Kent?

The increasing popularity of micro-moths continues apace, with many newcomers now making records. This is so welcome and encouraging, even if it has increased the task of record verification, and it works especially well if the records are routed through vice-county recorders. The anticipated national recording scheme is making slow but definite progress in planning, with a recent round of consultations and testing of ideas. Meanwhile, ways of recording are also expanding, mostly driven by

technological changes. Apps are now available that help the identification of all types of Lepidoptera and on-line schemes are becoming more popular and are attractive to a new audience of recorders. It is excellent to have more records but the down-side is that it is becoming ever more difficult for VC recorders to keep up with the location and reliability of new records. Recently iRecord has become popular and if a VC recorder joins this system he or she will be amazed and probably rather taken aback by the large number of records relating to their VC that are present in the scheme and which are unverified and so need attention. It is difficult to know where to start! The national scheme will have to encompass these new developments somehow or other!

Please may we now ask for many more records from 2015, arranged in our standard format and with a national grid reference, and the easiest way for us to receive these is as a **WORD file** to **JRL**. **Please do not submit records in spreadsheets**, as these then require extensive editing and retyping, adding enormously to the task of preparing the review. Thank you to so many enthusiasts, whose records make this such an extensive and important contribution, and especially to Ian Thirlwell for help with the tedious task of checking and collating the new records.

The 2014 records have come from the following recorders, each indicated in the text by his or her initials. Other recorders are named in full. M.V. Albertini, H.E. Beaumont, S.D. Beavan, K.P. Bland, A.G. Blunt, K.G.M. Bond, S.D.S. Bosanquet, P. Brooks, T. Bryant, P.J. Clarke, V.F. Clarke, G.A. Collins, G. Crittenden, M. Cubitt, M. Currie, A.M. Davis, B. Dickerson, B. Elliott, C.H. Fletcher, T.H. Freed, S. Gauld, J. A. Girdley, A.N. Graham, J.E. Graham, M.J. Gray, P.R. Hall, P. Harvey, R.J. Heckford, G. Hedges, B.P. Henwood, S.H. Hind, R. Homan, G. Hunter, J.B. Kemp, J.T. Knowler, J.R. Langmaid, D. F. J. Lee, A.D. Lewis, M. Lindsay, N. R. Lowe, J. McLean, D.V. Manning, A. Masterman, G.H.J. Meredith, N. Money, B. Neath, E. O'Donnell, M. O'Donnell, I. Outlaw, S.M. Palmer, C.W. Plant, B. Prater, C.R. Pratt, A.W. Pritchard, N. G. J. Richards, A. P. Russell, A.N.B. Simpson, R. Singleton, A. Skeates, E.G. Smith, I. Smith, M.H. Smith, B. Stewart, L. Still, N.J. Stone, T.J. Tams, M. Taylor, R. Terry, I.R. Thirlwell, G.M. Tordoff, L.A.C. Truscott, M.J. Wall, J.R. Wheeler, P.R. Williams, H. Young, J.E. Young and M.R. Young.

New vice-county records are shown with the VC number both underlined and in **bold** type. Journals are abbreviated as follows: *Ent. Rec.* for *Entomologist's Record and Journal of Variation*; *Ent. Gaz.* for *Entomologists' Gazette*; *BJENH* for *British Journal of Entomology and Natural History*; and *Atropos* is named in full. RIS refers to the Rothamsted Insect Survey, SEM to Scottish Entomologist's Meeting and VCH to Victoria County History.

SYSTEMATIC LIST

MICROPTERIGIDAE

01.001 *0001* *Micropterix tunbergella* (Fabr.) — Coed Pendugwm NR SJ103143 (**47**) 10.v.2014, det. PRW — T. Stretton *per* PRW

01.005 *0005* *M. calthella* (Linn.) — Creggan H624789 (**H36**) 14.vi.2014 — KGMB

ERIOCRANIIDAE

02.004 *0009* *Eriocrania sparrmannella* (Bosc.) — Castle Wood, Caerlaverock NNR NY0265 (**72**) early tenanted mines on *Betula* sp. 28.vi.2014 — MRY, SMP & JRL

02.005 *0010* *E. salopiella* (Staint.) — Aberystwyth SN6283 (**46**) 2014 RIS trap — PRH & JRL per PRH; Loch Goil-side NS1996 & 1997 (**98**) vacated mines on *Betula* sp.26.vi.2014 — MRY, SMP & JRL

NEPTICULIDAE

04.001 *0118* *Enteucha acetosae* (Staint.) — Pwll Deri SM89132882 (**45**) mines on *Rumex acetosella* 29.x.2014 — R. Taylor *per* ADL; Giant's Causeway C945442 (**H39**) vacated mines on *Rumex acetosa* 15.x.2014 — C. Henry *per* JMcC

04.003 *0117* *Stigmella confusella* (Wood) — Isle of Ulva NM4439 (**103**) 20.ix.2014, vacated mines on *Betula* sp. — MRY; Ballinruane Wood R398305 (**H8**) tenanted mines on *Betula pubescens* 30.viii.2014 — KGMB

04.005 *0110* *S. betulicola* (Staint.) — Loch Eynort North NF7928 (**110**) tenanted mines on *Betula* sp. 21.vi.2014 — MRY, JEY, SMP, JBK & JRL

04.006 *0113* *S. sakhalinella* Puplesis — Upton Fen NWT TG3813 (**27**) vacated mine on *Betula* sp. 26.vii.2014, conf. R. Edmunds — S. Wright *per* JRW; North Cliffe Wood SE8637 (**61**) vacated mines on *Betula* sp. 24.viii.2014 — A.D. Nunn *per* CHF

04.008 *0114* *S. glutinosae* (Staint.) — Hope Sandpit SJ299586 (**51**) vacated mines on *Alnus glutinosa* 17.ix.2014 — ANG & JEG; Killarney National Park (Ross Is.) V951888 (**H2**) mines on *Alnus glutinosa* 12.x.2014 — KGMB; Springmartin, Belfast J308744 (**H39**) 11.vii.2014, genitalia det. KGMB — S. Millar *per* JMcC

04.010 *0111* *S. microtheriella* (Staint.) — Balrath Wood N988641 (**H22**) tenanted mines on *Corylus avellana* 7.viii.2014 — EO'D

04.011 *0109* *S. prunetorum* (Staint.) — Dingestow Court (Dock Field) SO448094 (**35**) tenanted mines on *Prunus spinosa* 30.viii.2014 — SDSB

04.013 *0097* *S. malella* (Staint.) — Gelli Aur carpark SN595197 (**44**) vacated mines on *Malus domestica* 4.x.2014 — SDSB

04.014 *0098* *S. catharticella* (Staint.) — Buckingham Palace Garden TQ2879 (**21**) mines on *Rhamnus cathartica* 19.x.2014 — THF

04.018 *0080* *S. ulmivora* (Fol.) — Cork City (UCC campus) W662714 (**H4**) vacated mine on *Ulmus glabra* 15.x.2014 — KGMB

04.022 *0107* *S. regiella* (H.-S) — Thornham Farm, Branton SE655034 (**63**) vacated mine on *Crataegus monogyna* 16.x.2014, conf. JRL from photograph — S.R. Sowden *per* CHF

04.023 *0108* *S. crataegella* (Klim.) — Isle of Ulva NM4439 (**103**) 20.ix.2014, tenanted mines on *Crataegus monogyna* — MRY

04.024 mine on *Sorbus aucuparia* 5.vii.2014, conf. R. Edmunds — S. Wright *per* JRW

04.030 *0099* *S. hybnerella* (Hübn.) — Isle of Ulva, NM4439 (**103**) vacated mine on *Crataegus monogyna* 20.ix.2014 — MRY

04.036 *0072* *S. myrtillella* (Staint.) — Killarney National Park (Ross Is.) V941884 (**H2**) vacated mines on *Vaccinium myrtillus* 12.x.2014 — KGMB; Barrahaurin W420859 (**H4**) tenanted & vacated mines on *Vaccinium myrtillus* 15.viii.2014 — KGMB

04.038 *0070* *S. obliquella* (Hein.) — Cross Hands SN565129 (**44**) tenanted mines on *Salix viminalis* 15.ix.2014 — SDSB; Middletown SJ305121 (**47**) tenanted mine on narrow-leaved *Salix* sp. 22.x.2013, moth bred, det. PRW — D. Boyes *per* PRW; Nigg Village NH7969 (**106**) mines on long-leaved *Salix* sp. 25.ix.2014, det. MRY — NGJR

04.039 *0073* *S. trimaculella* (Haw.) — Ulster American Folk Park H430793 (**H36**) vacated mines on *Populus nigra* X 2.ix.2014 — KGMB

04.041 *0066* *S. sorbi* (Staint.) — Mynydd Bach SN703717 (**46**) vacated mine on *Sorbus aucuparia* 11.vii.2014 — SDSB *per* IS

04.044 *0064* *S. continuella* (Staint.) — Killarney National Park (Ross Is.) V949883 (**H2**) mine on *Betula pubescens* 12.x.2014 — KGMB; Corranelistrum M195409 (**H16**) mine on *Betula pubescens* 19.ix.2014 — KGMB

04.048 *0054a* *S. pretiosa* (Hein.) — Gordon Moss NT6342 (**81**) vacated mines on *Geum rivale* 20.xi.2014 — KPB

04.051 *0059* *S. poterii* (Staint.) — Ardnamona H077809 (**H36**) vacated mines on *Potentilla erecta* 4.ix.2014 — KGMB

04.052 *0057* *S. filipendulae* (Wocke) — Glengorm, Isle of Mull NM4257 (**103**) 18.ix.2014, vacated mines on *Filipendula ulmaria* — KPB

04.062 *0088* *S. samiatella* (Zell.) — Milton Abbot SX399780 (**3**) vacated mines on *Castanea sativa* 16.x.2014, conf. JRL from photographs — P.J. Barden *per* BPH; Fforest north, SN582055 (**44**) vacated mines on *Castanea sativa* 10.x.2014 — SDSB

04.063 *0086* *S. roborella* (Johan.) — Auckley SE6500 (**63**) tenanted mine on *Quercus* sp. 6.xi.2012, moth reared 20.v.2013 — S.R. Sowden *per* HEB; Aughanlig H865540 (**H37**) mines on *Quercus robur* 10.xi.2013, det. JRL — K. Murphy *per* JMcC, **New to Ireland**

04.068 *0046* *Trifurcula immundella* (Zell.) — Mynydd Ystaflau-carn north SN468270 (**44**) 10.vii.2014 — SDSB

04.073 *0033* *Bohemannia auriciliella* (Joannis) — Tangham Forest TM3547 (**25**) 21.vi.2014, male genitalia det. — R.A. Watson *per* AWP

04.074 *0021* *Ectoedemia sericopeza* (Zell.) — Odder, Lincoln SK942745 (**54**) mine on samara of *Acer platanoides* 28.viii.2014, — MJG

04.076 *0020* *E. decentella* (H.-S.) — Maes yr Haf, Newport SN05713896 (**45**) 2.vii.2014 — ADL

04.077 *0043* *E. weaveri* (Staint.) — The Berwyns SH966277 (**47**) mines on *Vaccinium vitis-idaea*, 6.iii.2014, moth bred, genitalia det. ANG — ANG & JEG *per* PRW

04.078 *0042* *E. septembrella* (Staint.) — Gormonston College O164664 (**H22**) tenanted mines on *Hypericum perforatum* 28.vii.2014 — EO'D

04.082 *0025* *E. intimella* (Zell.) — Broomfleet SE863286 (**61**) tenanted mines on *Salix* sp. 23.x1.2014 — A.D. Nunn *per* CHF; Girley Bog N6970 (**H22**) 1.vi.2014, det. KGMB — EO'D

04.083 *0024a* *E. hannoverella* (Glitz) — Nr. Hawarden Station SJ316696 (**51**) vacated mines in petiole and leaf blade of *Populus* x *canadensis* 30.x.2014 — ANG & JEG, **New to Wales**

04.089 *0037* *E. albifasciella* (Hein.) — Derrainey oakwood R750904 (**H9**) vacated mine on *Quercus petraea* 12.xii.2014 — KGMB

04.100 *0035* *E. minimella* — North Cliffe Wood SE8637 (**61**) tenanted mine on *Betula* sp. 24.viii.2014 — A.D. Nunn *per* CHF; Killarney National Park (Ross Is.) V949883 (**H2**) tenanted mines on *Betula pubescens* 12.x.2014 — KGMB; Coom Bridge, Doonpeter W683899 (**H5**) tenanted mines on *Betula pubescens* 17.x.2014 — KGMB; Ballinruane Wood R398305 (**H8**) vacated mine on *Betula pubescens* 30.viii.2014 — KGMB; Drumnaph Wood C844042 (**H40**) tenanted mines on *Betula pubescens* 5.ix.2014 — KGMB

OPOSTEGIDAE

05.001 *0119* *Opostega salaciella* (Treits.) — Lake Vyrnwy SH9624 (**47**) 7.vii.2014, det. PRW — G. Chambers *per* PRW

HELIOZELIDAE

06.001 *0158* *Antispila metallella* ([D. & S.]) — Llanymynech Hill SJ2621 (**47**) 30.iv.2014 — ANG & JEG *per* PRW

06.004 *0156* *Heliozela resplendella* (Staint.) — North Cliffe Wood SE8637 (**61**) vacated mine on *Alnus glutinosa* 28.ix.2014 — A.D. Nunn *per* CHF; Killarney National Park (Ross Is.) V951888 (**H2**) mines on *Alnus glutinosa* 12.x.2014 — KGMB; Gearagh (Annahala West) W301698 (**H3**) mine on *Alnus glutinosa* 11.x.2014 — KGMB

ADELIDAE

07.007 *0149* *Adela cuprella* ([D. & S.]) — Cors Fochno SN6392 (**46**) 21.iv.2014 — T. Allenby & I. Smith *per* PRH

07.014 *0143* *Nematopogon metaxella* (Hübn.) — Middletown SJ305121 (**47**) 3.vi.2014, genitalia det. — D. Boyes *per* PRW

INCUVARIIDAE

08.003 *0131* *Incurvaria oehlmanniella* (Hübn.) — Firestone Copse SZ5591 (**10**) 19.v.2014 — D.T. Biggs, MRY, JEY & JRL

08.004 *0132* *I. praelatella* ([D. & S.]) — Limekiln Wood, Hendre SO465127 (**35**) 1.vi.2014 — G.M. Tordoff *per* SDSB; Peebles NT249405 (**78**) 13.vi.2014, conf. MRY from photograph — J. Woolliams *per* RS; Rubha Dubh, South Uist. NF817135 (**110**) 13.vi.2014 — JBK

PRODOXIDAE

09.002 *0135* *Lampronia luzella* (Hübn.) — Ashwellthorpe Wood TM1398 (**27**) 10.v.2014 — A. Musgrove *per* JRW

09.006 *0138* *L. fuscatella* (Tengst.) — Beaconsfield SU9690 (**24**) 8.v.2014 — D. Morris *per* MVA; Killyleagh J506543 (**H38**) 31.v.2014, genitalia det. — JMcC

TISCHERIIDAE

10.002 *0124* *Tischeria dodonaea* Staint — Denham TQ0389 (**24**) mines on *Quercus* sp. 14.x.2014 — A. King *per* MVA

PSYCHIDAE

11.001 *0180* *Diplodoma laichartingella* (Goeze) — Skipwith Common SE6637 (**61**) larval case 24.iv.2014 — A. D. Nunn *per* HEB

11.002 *0175* *Narycia duplicella* (Goeze) — Gordon Moss NT6342 (**81**) case on dead tree 20.ix.2014 — KPB; Clury Farm NH974238 (**95**) case on trunk of *Populus tremula* 13.xi.2014, conf. S Moran — S Taylor *per* MT

11.003 *0176* *Dahlica triquetrella* (Hübn.) — Armthorpe SE6303 (**63**) female moth & larval cases 20.v.2014 — S.R. Sowden *per* HEB

11.005 *0179* *D. lichenella* (Linn.) — Colesbourne SO9913 (**33**) larval cases on building 19.i.2014 — RH, parthenogenetic female reared 9.iii.2014 — GHJM

11.010 *0183* *Bacotia claustrella* (Bruand) — Thompson Water/ Peddars Way TL9194 (**28**) larvae found grazing algae 10.x.2014, moths bred — S. Youngs *per* JRW

TINEIDAE

12.014 *0223* *Nemaxera betulinella* (Paykull) — Biggleswade TL193444 (**30**) 19.ix.2014 — L. Burgess *per* DVM

12.016 *0216* *Nemapogon cloacella* (Haw.) — Queenamidda, Rendall, Orkney HY372206 (**111**) 28.vii.2014 — B. Ribbands *per* SG

12.017 *0217* *N. wolffiella* Karsh. & Niels. — Bradfield Woods TL9357 (**26**) 3.v.2014 — N. Sherman *per* AWP

12.027 *0240* *Tinea pellionella* Linn. — Glencoe NN112575 (**98**) 3.vii.2014 — D. Watson *per* AM

12.029 *0244* *T. flavescentella* Haw. — Braishfield SU3723 (**11**) two flying around bone meal fertiliser 15.iv.2014, genitalia det. — BE *per* MJW

12.035 *0238* *Niditinea striolella* (Matsumura) — Staverton Park TM3550 (**25**) 16.vi.2014, female genitalia det. — R.A. Watson *per* AWP; Middletown SJ305121 (**47**) reared from a contents of a bird box 15.x.2013, genitalia det. — D. Boyes *per* PRW

12.039 *0230* *Monopis crocicapitella* (Clemens) — Auckley SE6500 (**63**) 14.vi.2014 — S.R. Sowden *per* HEB

12.044 *0212* *Haplotinea insectella* (Fabr.) — Warham Greens TF9443 (28) 5.vii.2014, male genitalia det. J Clifton, first county record for over 100 years — D. Appleton *per* JRW

12.047 *0199* *Psychoides verhuella* (Bruand) — Heacham TF6737 (**28**) larvae on *Phyllitis scolopendrium* 10.iv.2014, moths bred, male and female genitalia det. JRW — P. Cobb *per* JRW; Middletown SJ305121 (**47**), larva on *Phyllitis scolopendrium* 14.iv.2014, det. PRW — D. Boyes *per* PRW

12.048 *0200* *P. filicivora* (Meyr.) — Chorleywood TQ0296 (**24**) 16.xi.2014 — A. King *per* MVA; Sharnbrook SP990597 (**30**) pupa on *Phyllitis scolopendrium* 9.iv.2014, moth emerged 1.v.2014 — DVM; Northampton SP7458 (**32**) 2.vi.2014 — M. Coles *per* DVM; Millom SD18258453 (**70**) larva on *Phyllitis scolopendrium* 25.x.2014 — A. Cockroft *per* GHe; Cromarty NH788673 (**106**) larvae on unidentified fern 29.viii.2014, conf. MRY — M. Hind *per* MC; Lerwick HU475412 (**112**) 22.vi.2014, genitalia det. J. Clifton — P. Harris & R. Nason *per* PH; Caherdanial Nat. Historic Park V528589 (**H1**) 24.v.2014 — KGMB; Doire Locháin Thoir M177232 (**H16**) 27.v.2014 — KGMB

BUCCULATRICIDAE

14.008 *0272* *Bucculatrix cidarella* (Zell.) — Hope Sand Pit SJ299586 (**51**) vacated mines on *Alnus glutinosa* 17.ix.2014 — ANG, JEG; Knockranny M148342 (**H16**) mine on *Myrica gale* 17.ix.2014 — KGMB

14.011 *0274a* *B. ulmifoliae* Hering — Brighton TQ317069 (**14**) 6.vi.2014, male genitalia det. AMD — N. Guerin *per* AMD

GRACILLARIIDAE

15.002 *0280* *Caloptilia cuculipennella* (Hübn.) — Glyn Road, Penallt SO527100 (**35**) 2.i.2014, conf. SDSB — I. Rabjohn *per* SDSB; Tilehouse Green SP16877627 (**38**) 4.v.2014 — S. Hackett *per* NJS

15.003 *0281* *C. populetorum* (Zell.) — Lord's Throat, Benachie NJ633198 (**92**) larval feeding signs on *Betula* sp. 4.ix.2014 — MRY

15.005 *0283* *C. betulicola* (Hering) — Llanmerewig Glebe SO159928 (**47**) 16.vii.2014, genitalia det. D. Boyes — D. Boyes & PRW

15.006 *0284* *C. rufipennella* (Hübn.) — North Loch Eynort, South Uist. NF790283 (**110**) 8.ix.2014 — JBK

15.010 *0288* *C. stigmatella* (Fabr.) — High Claonaig NR872568 (**101**) 28.iv.2014, conf. MRY — GHu

15.017 *0296* *Calybites phasianipennella* (Hübn.) — Cheltenham SO9424 (**33**) 30.ix.2014 — RH; Yorkshire Museum gardens, York SE5952 (**62**) 1.vii.2014 — P. Wildgust & S.Ogilvy *per* HEB

15.019 *0313* *Acrocercops brongniardella* (Fabr.) — River Nanny O155711 (**H22**) 3.vii.2014 — EO'D

15.022 *0310* *Callisto denticulella* (Thunb.) — Maes yr Haf, Newport SN05713896 (**45**) 15.vi.2014 — ADL

15.024 *0300* *Parornix loganella* (Staint.) — Claonaig SSSI NR8655 (**101**) 5.v.2014, conf. MRY — GHu

15.026 *0302* *P. fagivora* (Frey) — Hawnby SE5290 (**62**) vacated mines on *Fagus sylvatica* 30.x.2014 — CHF

15.029 *0304* *P. devoniella* (Staint.) — Ulster American Folk Park H430793 (**H36**) mines on *Corylus avellana* 2.ix.2014 — KGMB

15.032 *0308* *P. finitimella* (Zell.) — Sealand, Bumper's Lane SJ382658 (**51**) leaf folds on *Prunus spinosa* 15.viii.2014, larva examined — ANG, JEG

15.034 *0315* *Phyllonorycter harrisella* (Linn.) — Derrainey oakwood R750904 (**H9**) mines on *Quercus petraea* 12.xii.2014 — KGMB

15.035 *0316* *P. roboris* Zell. — Cockayne Hatley RIS trap TL2549 (**30**) 9.iv.2014, genitalia det. DVM — I. Woiwod *per* DVM; Ysgwr-Ffordd SO0873 (**43**) 15.v.2014 —PJC & VFC; Hurst Clough, Broadbottom SJ986944 (**58**) single tenanted & parasitised mines on *Quercus* sp. 9.viii.2014, moth emerged 9.iv.2015 — SHH

15.036 *0317* *P. heegeriella* (Zell.) — Craignure, Isle of Mull NM7137 (**103**) 22.ix.2014, mines on *Quercus robur* — MRY

15.038 *0319* *P. kuhlweiniella* (Zell.) — RSPB Sandy TL191477 (30) 30.iv.2014, first VC record since VCH (1904) — I.K. Dawson *per* DVM

15.039 *0320* *P. quercifoliella* (Zell.) — Brodick NS0138 (**100**) 2014 RIS trap, male genitalia det. — PRH

15.040 *0321* *P. messaniella* (Zell.) — Taynuilt NN0031 (**98**) mine on *Fagus sylvatica* 18.vi.2014 — SMP & JRL

15.044 *0324* *P. sorbi* (Frey) — Meelragh N076885 (**H29**) mine on *Sorbus aucuparia* 8.ix.2014 — KGMB

15.046 *0326* *P. blancardella* (Fabr.) — Kildary NH7775 (**106**) mines on *Malus domestica* 26.ix.2014, det. MRY — NGJR

15.049 *0329* *P. spinicolella* (Zell.) — Gearagh (Annahala West) W301698 (**H3**) mine on *Prunus spinosa* 11.x.2014 — KGMB

15.050 *0330* *P. cerasicolella* (Zell.) — Barlow Common SE6328 (**64**) tenanted mines on *Prunus avium* 23.x.2014 — CHF

15.053 *0332* *P. leucographella* (Zell.) — Cavan Town H415052 (**H30**) mines on *Pyracantha* 7.ix.2014 — KGMB

15.054 *0333* *P. viminiella* (Sircom) — Nigg Village NH7969 (**106**) mines on long-leaved *Salix* sp. 30.ix.2014, det. MRY — NGJR

15.058 *0337* *P. hilarella* (Zett.) — High Claonaig NR872568 (**101**) 28.iv.2014, conf. MRY — GHu; Caherdanial Nat. Historic Park V529592 (**H1**) 24.v.2014, genitalia det. — KGMB; Ardnadoman M583177 (**H15**) 16.v.2014, genitalia det. — KGMB

15.064 *342* *P. coryli* (Nic.) — Gortroe R430311 (**H8**) mines on *Corylus avellana* 16.viii.2014 — KGMB; Sloughan Glen H277742 (**H36**) mines on *Corylus avellana* 2.ix.2014 — KGMB

15.067 *0345* *P. rajella* (Linn.) — Loch Eynort North, South Uist NF788281 (**110**) mines on *Alnus glutinosa* 21.vi.2014 — JRL, SMP & MRY; Killavullen W645993 (**H5**) tenanted mines on *Alnus glutinosa* 30.viii.2014 — KGMB

15.081 *0359* *P. nicellii* (Staint.) — Ulster American Folk Park H430793 (**H36**) mines on *Corylus avellana* 2.ix.2014 — KGMB

15.083 *0361* *P. trifasciella* (Haw.) — Ballinruane Wood R398304 (**H8**) mine on *Lonicera periclymenum* 31.viii.2014 — KGMB

15.086 *0364* *P. geniculella* (Ragonot) — Whitechurch (St Enda's Park) O144275 (**H21**) mines on *Acer pseudoplatanus* 28.viii.2014 — KGMB

15.0861 *P. pastorella* (Zell.) — Buckingham Palace Garden (**21**) mine with pupal exuviae on *Salix* x *sepulchralis* 19.x.2014; St James's Park (21) mines on *Salix* x *fragilis* 4.xi.2014; Battersea Park (**17**) mines on *Salix* x *sepulchralis*, *S. euxina* and *S.* x *pendulina* 19.xi.2014 — THF, **New to the British Isles**, *Ent. Rec.***127**: 1-10

15.087 *0365* *P. comparella* (Dup.) — Denham TQ0488 (**24**) mines on *Populus* x *canescens* 5.x.2014 — A. King *per* MVA

15.089 *0366a* *Cameraria ohridella* Deschk. & Dim. — Newborough Forest SH417642 (**52**) vacated mines on *Aesculus hippocastanum* 16.viii.2014 — ANG, JEG; Cork City (UCC campus) W662714 (**H4**) mines on *Aesculus hippocastanum* 2.x.2014 — KGMB; Courtown Woods T197569 (**H12**) mines on *Aesculus hippocastanum* 15.viii.2014 — MO'D; Bray O178299 (**H20**) mines on *Aesculus hippocastanum* 24.vii.2014 — E. Anyaegbunam *per* EO'D; Virginia N600878 (**H30**) mines on *Aesculus hippocastanum* 19.vii.2014 — D. Nash *per* EO'D; Belfast J328722 (**H39**) 6.vi.2014 — D. Allen *per* JMcC

15.090 *0367* *Phyllocnistis saligna* (Zell.) — Dolydd Hafren NR SO2000 (**47**) mines on *Salix* sp. 4.viii.2014, moth bred, genitalia det. ANG — ANG & JEG *per* PRW

15.093 *0369* *P. xenia* Her. — Denham TQ0488 (**24**) mines on *Populus* x *canescens* 15.x.2014 — A. King *per* MVA; Upper Stondon TL152352 (**30**) mines on *Populus alba* 22.viii.2014 — M.G. Banthorpe *per* DVM; B1040 road-verge TL251561 (**31**) tenanted and vacated mines on *Populus* x *canescens* 28 viii 2014 — BD

15.0931 *0366b* *P. citrella* Staint. — Endsleigh Garden Centre, nr Ivybridge SX621558 (**3**) mines and cocoons on leaves of 'Meyer' lemon 17.xii.2014, stated origin Portugal — RJH

YPONOMEUTIDAE

16.002 *0425* *Yponomeuta padella* (Linn.) — Gartavaich NR858588 (**101**) 26.vii.2014, conf. MRY — GHu

16.003 *0426* *Y. malinellus* Zell. — Greenmount Campus, CAFRE J155847 (**H39**) larval webs on *Malus* sp. 6.vi.2014 — R. Monteith *per* JMcC

16.005 *0428* *Y. rorrella* (Hübn.) — Runcorn SJ503824 (**58**) larvae on *Salix fragilis* 18.vi.2013 — T.Banks *per* SHH; Tramore S577013 (**H6**) 31.vii.2014, conf. JRL and KGMB from photograph — TB, **New to Ireland,** *Ent. Rec.* **126**: 189

16.006 *0429* *Y. irrorella* (Hübn.) — Cley TG0443 (**27**) 30.vii.2013 — I. Walker *per* JRW

16.008 *0431* *Y. sedella* (Wals.) — Carlton SP9555 (**30**) 5.vii.2014 — H.A. Smith *per* DVM; WWT Penclacwydd SS531983 (**44**) 17.vii.2014 — B. Stewart *per* SDSB; Grange over Sands SD397767 (**69**) 20.vii.2014 — M. Chadwick *per* LS

16.010 *0435* *Zelleria hepariella* Staint. —Tramore S577013 (**H6**) 31.vii.2014, female genitalia det. KGMB — TB

16.015 *0437* *Swammerdamia caesiella* (Hübn.) — Lake Vyrnwy SH9624 (**47**) 24.vi.2014, genitalia det. — D. Boyes *per* PRW

16.017 *0438* *S. pyrella* (Villers) — Berry Head, Brixham SX9456 (3) several larvae on *Prunus spinosa* 30.ix.2014, moths reared, previously unrecorded foodplant — SDB & RJH; Strathnaver NC711470 (**108**) 21.vii.2014, male genitalia det. PRH — PRH *per* GC

16.018 0439 *S. compunctella* H.-S. — Creggan H624789 (**H36**) 14.vi.2014, genitalia det. — KGMB; Drumnaph NR C837039 (**H40**) 18.vi.2014, genitalia det. — KGMB

YPSOLOPHIDAE

17.002 *0452* *Ypsolopha nemorella* (Linn.) — Quinish, Isle of Mull NM415531 (**103**) 13.viii.2014, conf. MRY — BP *per* AS

17.005 *0455* *Y. scabrella* (Linn.) — Maenporth SW793295 (**1**) 26.vii.2014 — G. Davis *per* LACT

17.006 *0456* *Y. horridella* (Treits.) — Worcester SO883570 (**37**) 4.viii.2014 — S. Whitehouse *per* ANBS; Blaxton SE6700 (**63**) 30.vii.2014 — S.R. Sowden *per* HEB

17.008 *0458* *Y. alpella* ([D. & S.]) — Redwood, Slimbridge SO7003 (**34**) 6.ix.2014 — P. Cranswick *per* RH

17.012 *0462* *Y. sequella* (Clerck) — RSPB Insh Marshes NH 818020 (**96**) 27.viii.2014 — M. Evans *per* MT

17.014 *0251* *Ochsenheimeria taurella* ([D. & S.]) — Linslade Wood SP9026 (**24**) 22.ix.2014 — R. Morrisey per MVA

PLUTELLIDAE

18.006 *0468* *Rhigognostis incarnatella* (Steudel) — Lochgoilhead NN197014 (**98**) 25.vi.2014 — MRY, SMP & JRL

18.007 *0469* *Eidophasia messingiella* (F. v. R.) — Shanklin SZ571810 (**10**) 24.vi.2014 — IO

GLYPHIPTERIGIDAE

19.001 *0470* *Orthotelia sparganella* (Thunb.) — Kilpatrick T246654 (**H12**) 11.vii.2014 — MO'D

19.005 *0395* *Glyphipterix haworthana* (Steph.) — Dowrog Common SM 772 270 (**45**) larvae in heads of *Eriophorum angustifolium* 16.i.2014 — R. Taylor *per* ADL

19.006 *0394* *G. forsterella* (Fabr.) — South Glendale, South Uist. NF7814 (**110**) 26.v.2014 — JBK; Carrow Bog M685225 (**H15**) 28.v.2014 — KGMB

19.007 *0391* *G. simpliciella* (Steph.) — Lerwick HU475412 (**112**) 10.vi.2014, genitalia det. J. Clifton — P. Harris & R. Nason *per* PH

19.010 *0472* *Digitivalva pulicariae* (Klim.) — Aston Locks SJ335264 (**40**) vacated mines on *Pulicaria dysenterica* 20.vi.2014, conf. ANBS — D. Knight *per* AGB

19.011 *0473* *Acrolepiopsis assectella* (Zell.) — Sapcote SP490937 (**55**) 31.iii.2014, det. A.J. Mackay — G.Calow *per* APR

ARGYRESTHIIDAE

20.001 *0401* *Argyresthia laevigatella* (Heyd.) — Lake Vyrnwy SH9624 (**47**) 24.vi.2014, genitalia det. — D. Boyes *per* PRW

20.004 *0405* *A. arceuthina* Zell. —Tynron Junipers NX8292 (**72**) 6.vi.2014, det. KPB — R. & B. Mearns *per* KPB

20.005 *0409a* *A. trifasciata* Staud. — Bodelwyddan SJ001756 (**51**) to actinic light 16.v.2014, det. PRW — A.J. Tadman *per* ANG; Peebles NT248398 (**78**) 31.v.2014, conf. MRY from photograph — RS; Galashiels NT484363 (**79**) 1.vi.2014, conf. MRY — ML

20.007 *0409b* *A. cupressella* Wals. — Northampton SP7458 (**32**) 3.vi.2014 — M. Coles *per* DVM; Undy ST438871 (**35**) 22.vi.2014 — K. Jones *per* SDSB; North Ferriby TA0026 (**61**) 22.vi.2014 — I. Marshall *per* HEB; Stamullen O146662 (**H22**) 19.vi.2014 — EO'D

20.011 *0410* *A. brockeella* (Hübn.) — Derreen Bog N091926 (**H29**) 20.vi.2014 — KGMB

20.014 *0413* *A. sorbiella* (Treits.) — Coed Pendugwm NR SJ103143 (**47**) 25.vi 2014, det. PRW — D. Boyes *per* PRW

20.017 *0416* *A. glaucinella* (Zell.) — Logie House, Forres NJ007508 (**95**) 8.vi.2014 — MRY; Thrumster House ND333450 (**109**) 15.vii.2014 — NM

20.019 *0418* *A. conjugella* Zell. — Beaghmore Stone Circles H683842 (**H36**) beaten from *Sorbus aucuparia* 15.vi.2014 — KGMB

20.020 *0419* *A. semifusca* (Haw.) — Kildary NH7775 (**106**) 16.viii.2014, conf. MRY — NGJR

20.021 *0420* *A. pruniella* (Clerck) — Aberystwyth, Llangawsai SN594813 (**46**) 18.vi.2014 — S. Cox *per* IS

20.023 *0422* *A. albistria* (Haw.) — Ower M225374 (**H16**) 9.ix.2014 — KGMB

20.024 *0423* *A. semitestacella* (Curt.) — Dawyck Botanic Garden NT170349 (**78**) 14.ix.2014, conf. MRY from photograph — J. Woolliams *per* RS; Brodick NS0138 (**100**) 2014 RIS trap, female genitalia det. — PRH

LYONETIIDAE

21.002 *0262* *Lyonetia prunifoliella* (Hübn.) — Portsmouth SU676003 (**11**) 7.viii.2014 — IRT

PRAYDIDAE

22.002 *0449* *Prays fraxinella* (Bjerk.) — Craignure, Isle of Mull NM715373 (**103**) 5.vii.2014, conf. MRY — AS

22.003 *0449* *P. ruficeps* (Hein.) — Kenilworth SP286711 (**38**) 24.vii.2014, genitalia det. — M. Kennard *per* NJS; Roundton Hill NR SO293946 (**47**) 31.vii.2014 — D. Boyes *per* PRW; Spurn NNR TA4115 (**61**) 21.viii.2010 — B.R. Spence *per* HEB

22.005 *0449b* *P. peregrina* Agassiz — Pegwell (**15**) 20 & 26.vii.2014 — F. Solly, *Atropos* migrant review 2014: 50

BEDELLIIDAE

24.001 *0264* *Bedellia somnulentella* (Zell.) — Betty's Fen TM0179 (**28**) larva on *Calystegia* sp. 11.x.2014 — JRL, BE & Norfolk Moth Group; Pont Hywel SN130273 (**44**) vacated mines and frass on *Calystegia sepium* 16.ix.2014 — SDSB; Hull University TA077316 (**61**) mines and pupa on *Calystegia sepium* 28.x.2014 — A.D. Nunn *per* CHF Peatlands Park H8960 (**H37**) 26.vii.2014, genitalia det. J. Clifton — K. Murphy *per* JMcC

SCYTHROPIIDAE

25.001 *0450* *Scythropia crataegella* (Linn.) — Hexham NY941639 (**67**) *c*50 larvae in webs on *Cotoneaster* sp. 31.vii.2014 — T.C. Sexton *per* TJT

AUTOSTICHIDAE

27.001 *0870* *Oegoconia quadripuncta* (Haw.) — Aberystwyth, Llangawsai SN594813 (**46**) 11.vi.2014, genitalia det. PRH — S. Cox *per* IS

OECOPHORIDAE

28.004 *0636* *Denisia similella* (Hübn.) — Llanddewi SO103686 (**43**) 7.vii.2013 — I. Standen & R. Standen *per* PJC; Barnett Demense J317688 (**H39**) 14.vii.2014 — S. Millar *per* JMcC

28.005 *0638a* *D. albimaculea* (Haw.) — Tophill Low NR TA0748 (**61**) 13 & 14.vi.2014 — M. Hodges *per* HEB; Yorkshire Museum gardens, York SE5952 (**62**) 1.vii.2014 det. HEB & conf. JRL from photograph — P. Wildgust & S. Ogilvy *per* HEB; Auckley SE6500 (**63**) 12.vi.2014 — S.R. Sowden *per* HEB

28.008 *0642a* *Metalampra italica* Baldizzone — Woolpit TL972625 (**26**) 29.vii.2014 — P. Bryant *per* AWP; Bawdeswell TG0421 (**27**) 1.viii.2014, female genitalia det. J. Clifton. — D. Appleton *per* JRW; Titchwell RSPB TF7544 (**28**) 29.vii.2014 — RSPB staff *per* JRW

28.010 *0647* *Hofmannophila pseudospretella* (Staint.) — Culhame C882151 (**H40**) 16.vi.2014 — KGMB

28.012 *0644* *Borkhausenia fuscescens* (Haw.) — Lochinver NC085235 (**108**) 13.vii.2014 — PRH *per* GC

28.013 *0637* *Crassa tinctella* (Hübn.) — Bach Howey SO108427 (**43**) 6.vi.2014 — PJC & VFC

28.014 *0642* *C. unitella* (Hübn.) — Bodelwyddan SJ001756 (**51**) to actinic light 3.vii.2014 — A.J. Tadman *per* ANG; Corbridge NY9964 (**67**) 31.vii.2014 — M. Richardson *per* TJT

28.015 *0640* *Batia lunaris* (Haw.) — Llangynidr SO1519 (**42**) 17.vii.2014 — M. Tillotson *per* NRL

28.020 *0650* *Dasycera oliviella* (Fabr.) — Whiteparish Common SU257226 (**8**) 24.vii.2014 — EGS & MHS

28.025 *0654* *Pleurota bicostella* (Clerck) — Creggan H624789 (**H36**) 14.vi.2014 — KGMB

28.027 *0653* *Aplota palpellus* (Haw.) — Mill House, Chiddingfold SU9533 (**17**) 22.vii.2014, det. GAC — J. Rees *per* GAC

LYPUSIDAE

30.003 *0660* *Pseudatemelia josephinae* (Toll) — Coed Pendugwm NR SJ103143 (**47**) 25.vi 2014, genitalia det. — D. Boyes *per* PRW

30.004 *0659* *Amphisbatis incongruella* (Staint.) — Dersingham Fen TF6829 (28) 1.iv.2014, male genitalia det., first county record for over 100 years — R.E. Jones *per* JRW

DEPRESSARIIDAE

32.002 *0667* *Semioscopis steinkellneriana* ([D. & S.]) — Clynnog Fawr SH413494 (**49**) 14.iv.2014 — KGMB; Holmhead, Lochar Moss NY0470 (**72**) 26.iv.2014, det. KPB — R. & B. Mearns *per* KPB; Lanark NS885431 (**77**) 9.v.2014 — J. Davis *per* MRY

32.007 *0701* *Agonopterix ocellana* (Fabr.) — Braemore ND073305 (**109**) 15.iv.2014 — NM

32.009 *0691* *A. purpurea* (Haw.) — Biggleswade TL193444 (30) 15.iv.2014, first VC record since VCH (1904) — L. Burgess *per* DVM

32.019 *0689* *A. ciliella* (Staint.) —Holmhead, Lochar Moss NY0470 (**72**) 26.iv 2014, det. KPB — R. & B. Mearns *per* KPB

32.033 *0712* *A. astrantiae* (Hein.) — Peatlands Park H890604 (**H37**) 9.vii.2013, genitalia det. KGMB — Ted Rolston *per* JMcC

32.035 *0714* *A. yeatiana* (Fabr.) — St Bride's ST299815 (**35**) 22.ii.2014, conf. SDSB — M. Oxford *per* SDSB; Ballyvergan Fen X075759 (**H5**) 1.iv.2014, genitalia det. — KGMB

32.040 *0671* *Depressaria ultimella* Staint. — Lanlay Meadows ST073758 (**41**) 20.ix.2014, genitalia det. — GMT; Querrin Q918544 (**H9**) 17.iii.2014 — KGMB

32.043 *0678* *D. sordidatella* (Tengst.) — Middletown SJ305121 (**47**) 15.vii.2014, det. PRW — D. Boyes *per* PRW

ETHMIIDAE

33.004 *0717* *Ethmia terminella* Fletch. — Alsager SJ819545 (**58**) 17.vi.2014 — M.Dale *per* SHH

COSMOPTERIGIDAE

34.001 *0899* *Pancalia leuwenhoekella* (Linn.) — Goat Island, Axmouth undercliff SY276895 (**3**) 19.iv.2014, conf. BPH from photograph — A.J. Cunningham *per* BPH

34.004 *0898* *Limnaecia phragmitella* Staint. — Hollands Farm NY0465 (**72**) larvae on *Typha* sp. 28.vi.2014 — KPB; Luffness NT4780 (**82**) larvae on *Typha* sp.10.iv.2014 — KPB

34.005 *0894* *Cosmopterix zieglerella* (Hübn.) — Alverstone SZ577855 (**10**) vacated mines on *Humulus lupulus* 20.ix.2014, conf. MJW — P. Barden *per* IO; Bracklesham SZ8197 (**13**) mines on *Humulus lupulus*, some with larvae 1.viii.2014 — D.F.J. Lee & JRL

34.007 *0896* *C. orichalcea* Staint. — Thorn Point, Bere Ferrers SX441631 (**3**) 22.vi.2014, conf. BPH from photograph — P.J. Barden *per* BPH

34.008 *0896a* *C. scribaiella* Zell. — Bracklesham SZ808974 (**13**) 13.vi.2014 — D.F.J. Lee *per* CRP

34.009 *0896b* *C. pulchrimella* Chambers — Salisbury SU1429 (**8**) cocoons on *Parietaria judaica* 10.xii.2014, moths bred — EGS & MHS

GELECHIIDAE

35.010 *0843* *Aproaerema anthyllidella* (Hübn.) —Elrig, Carn Liath NN9269 (**89**) 7.viii.2014 — KPB

35.011 *0853* *Anacampsis populella* (Clerck) —Newburn NZ167653 (**67**) 30.vii.2014, male genitalia det. TJT— R.G. Waugh *per* TJT

35.022 *0862* *Dichomeris marginella* (Fabr.) — Crickhowell SO2119 (**42**) 11.vii.2014 — S.B. Furber *per* NRL

35.028 *0866* *Brachmia blandella* (Fabr.) — Cwm Gignog, Hayscastle SM884247 (45) 25.vii.2014, first county record since 1875 — R. Taylor *per* ADL

35.029 *0867* *B. inornatella* (Dougl.) — Walberton SU960065 (**13**) 5.vii.2014 — J.T. Radford *per* CRP

35.038 *0789* *Bryotropha domestica* (Haw.) — Hawick NT499148 (**80**) 19.vi.2014, conf. MRY — ML; SWT Reserve Centre Montrose Basin NO701565 (**90**) 3.vii.2014, conf. MRY — PB; Kilmartin NR836987 (**98**) 28.vii.2014 — D.C. Jardine *per* AM

35.039 *0788* *B. politella* (Staint.) — Tregaron:Cors Caron SN688620 (**46**) 25.v.2014, genitalia det. PRH, first published VC record — E. Snell *per* IS

35.043 *0784* *B. galbanella* (Zell.) — Buttermere NY178166 (**70**) 25.vi.2015 — C. Lewis *per* LS

35.045 *0777* *B. basaltinella* (Zell.) — North Elmham TF9820 (**28**) 2.ix.2014, male genitalia det. J. Clifton. — D. Appleton *per* JRW

35.046 *0782* *B. senectella* (Zell.) — Aberystwyth SN6283 (**46**) 2014 RIS trap, male genitalia det. — PRH

35.047 *0779* *B. affinis* (Haw.) — Aberystwyth SN591812 (**46**) 25.vii.2014, conf. SMP — S. Cox *per* IS; Peebles NT248398 (**78**) 17.vii.2014, conf. MRY from photograph — RS

35.048 *0778* *B. umbrosella* (Zell.) f. *mundella* — Daliburgh NF735217 (**110**) 24.vi.2014 — MRY, JEY, SMP & JRL

35.049 *0780* *B. similis* (Staint.) — Brodick NS0138 (**100**) 2014 RIS trap, male genitalia det. — PRH

35.050 0752 *Aristotelia ericinella* (Zell.) — Newfield Colliery N.R. SK321156 (**55**) 15 at MV light, 30.vii.2014 — G.L. Finch, APR & K. Tailby

35.065 *0728* *Monochroa cytisella* (Curt.) — Bucknell Wood SP6545 (**32**) 21.vi.2014, genitalia det. DVM — J. Skinner *per* DVM; Stirling NS794932 (**86**) 16.vii.2014, det. SMP & MRY — A.C.N. Rogers *per* HY; Brodick NS0138 (**100**) 2014 RIS trap, female genitalia det. — PRH

35.071 *0736* *M. lucidella* (Steph.) — Bowness-on-Solway NY207618 (**70**) 30.vi.2014, conf. SMP — LS

35.073 *0737* *M. palustrellus* (Dougl.) — Addlethorpe TF549688 (**54**) 21.vi.2014— S & K Hand *per* MJG

35.075 *0744* *M. arundinetella* (Boyd) — Dunwich TM475724 (**25**) 26.vi.2014, genitalia det. J. Clifton — P. Kitchener *per* AWP

35.076 *0741* *M. suffusella* (Dougl.) — Fir & Pond Woods TL276011 (**21**) 4.viii.2014 — RT

35.079 *0733* *Eulamprotes wilkella* (Linn.) — Eaton Ford TL176604 (**30**) 25.vii.2014, genitalia det. K. Royles — A.A. Lawrence *per* DVM

35.089 *0794* *Prolita sexpunctella* (Fabr.) —Kelhead Flow, Annan NY1470 (**72**) 30.v.2014, det.KPB — R. & B. Mearns *per* KPB

35.101 *0802a* *Gelechia sororculella* (Hübn.) — Brassey NR SP1322 (**33**) 20.vii.2014, genitalia det. — GHJM *per* RH; Girley Bog N698702 (**H22**) 16.vii.2014 — EO'D

35.106 *0807* *G. turpella* ([D. & S.]) — Swindon SU18 (**7**) 6.vii.2014 — D. Brotheridge *per* EGS & MHS

35.109 *0822* *Scrobipalpa acuminatella* (Sirc.) — Hill of Ratter ND244733 (**109**) 5.vi.2014 — NM

35.116 *0816* *S. obsoletella* (F. v. R.) — Middleton LWT NR SD414590 (**60**) 30.viii.2014, male genitalia det. N. Rogers, conf SMP — J. Patton *per* JAG

35.127 *0825a* *Tuta absoluta* (Meyr.) — Torpoint SX436547 (**2**) 21.x.2014, female genitalia det. SMP — LACT; Southsea SZ655987 (**11**) 31.viii.2014, male genitalia det. — JRL

35.128 *0827* *Caryocolum alsinella* (Zell.) — Freshwater West SM 882005 (**45**) 1.vii.2014, genitalia det. — R. Taylor *per* ADL

35.129 *0828* *C. viscariella* (Staint) — Birling Links, Warkworth NU255064 (68) larval spinnings on *Silene dioica* 2.v.2014, first record since 1887, moths bred — A.J. Fairclough *per* TJT

35.159 *0760* *Exoteleia dodecella* (Linn.) — Stamullen O146662 (**H22**) 11.vii.2014 — EO'D

BATRACHEDRIDAE

36.001 *0878* *Batrachedra praeangusta* (Haw.) — Glencoe NN1156 (**98**) 2014 RIS trap, female genitalia det. — PRH

36.002 *0879* *B. pinicolella* (Zell.) — Llandaff North, Cardiff ST154789 (**41**) 11.vii.2014 — GMT

COLEOPHORIDAE

37.006 *0491* *Coleophora gryphipennella* (Hübn.) — Calgary Bay, Mull NM3751 (**103**) cases on *Rosa* sp. 20.ix.2014 — KPB

37.007 *0492* *C. flavipennella* (Dup.) — Middletown SJ305121 (**47**) 8.vii.2014, genitalia det. — D. Boyes *per* PRW; Tramore S577013 (**H6**) 13.vii.2014, female genitalia det. KGMB — TB; Derreen N088919 (**H29**) 21.vi.2014, genitalia det. — KGMB

37.011 *0497* *C. badiipennella* (dup.) — Copperhill NR, Ancaster SK980423 (**53**) case on *Ulmus* sp. 16.ix.2014 — MJG

37.012 *0499* *C. limosipennella* (Dup.) — Llandaff North, Cardiff ST152784 (**41**) larval cases on *Ulmus glabra* 28.x.2014 — GMT

37.015 *0493* *C. serratella* (Linn.) — Drumnaph Wood C845041 (**H40**) mines & case on *Betula pubescens* 17.vi.2014 — KGMB

37.016 *0495* *C. spinella* (Schrank) — Nant Sarah Woods SN301404 (**44**) 2.vii.2014, male genitalia det. — SDSB

37.019 *0502* *C. trigeminella* Fuchs — Irchester CP SP9066 (**32**) 21.vi.2014, genitalia det. DVM — J. Skinner *per* DVM

37.020 *0503* *C. fuscocuprella* H.-S. — Siccaridge Wood SO9303 (**33**) case on *Corylus avellana* 16.x.2014 — JRL

37.026 *0509* *Coleophora violacea* (Ström) — North Cliffe Wood SE8637 (**61**) two cases on *Betula* sp. 31.viii.2014 — A. D. Nunn *per* HEB

37.028 *0510* *C. juncicolella* Staint. — — Blorenge SO263106 (**35**) larval cases swept from *Calluna vulgaris* 14.iv.2014 — GMT; Trerhos Common SM924272 (**45**) cases swept from heather 20.v.2014 — R. Taylor *per* ADL

37.029 *0511* *C. orbitella* Zell. — Holmingham Wood SS953203 (**4**) one case on *Betula* sp. and another on *Corylus avellana* 3.x.2014 — SDB & RJH; Ring Haw TL0597 (**32**) 14.vi.2014, genitalia det. DVM — J. Skinner *per* DVM; North Cliffe Wood SE8637 (**61**), larval case 15.iii.2014, moth reared 3.v.2014, genitalia det. HEB — A. D. Nunn *per* HEB

37.030 *0512* *C. binderella* (Koll.) — Holmingham Wood SS953203 (**4**) one case on *Betula* sp. and another on *Corylus avellana* 3.x.2014 — SDB & RJH; Gogarth Bog SN678984 (**48**) case on *Betula* sp. 9.viii.2014 — ANG, JEG

37.033 *0516* *C. trifolii* (Curt.) — Felindre Farchog SN100390 (**45**) 11.vii.2014, det. JRL from photograph — J. Atkinson *per* ADL

37.034 *0517a* *C. frischella* (Linn.) — Halse Copse meadow SP5742 (**32**) 18.v.2014, genitalia det. DVM — J. Skinner *per* DVM; Denaby Ings NR SE4901 (**63**) 30.v.2014, female genitalia det. — HEB

37.038 *0522* *C. lineolea* (Haw.) — Ceibwr/Traeth Bach SN102452 (**45**) case on *Betonica officinalis* 30.v.2014, det.JRL from photograph — R. Taylor *per* ADL

37.040 *0524* *C. lithargyrinella* Zell. — Craig Forda SJ253295 (**40**) larval cases on *Stellaria holostea* 17.iv.2014 — D. Knight *per* AGB; Stanner Rocks SO2658 (**43**) cases on *Stellaria holostea* 8.vi.2014 — PJC & VFC; Skellingthorpe Woods SK957725 (**53**) several cases on *Stellaria holostea*. 16.ix.2014 — MJG

37.046 *0519* *C. deauratella* L. & Z. — Glasgow NS56806755 (**77**) 20.vi.2014, det. MRY — R. Weddle *per* MRY

37.048 *0518* *C. mayrella* (Hübn.) —Duncow Woods NX9782 (**72**) 30.vii.2014, det. KPB — R. & B. Mearns *per* KPB

37.053 *0536* *C. betulella* (Hein.) — Borth, Cors Fochno SN634922 (**46**) 10.vii.2014, genitalia det. — D. Boyes *per* IS

37.061 *0530* *C. lixella* (Zell.) — Clarach SN586845 (**46**) 1.vii.2014, conf. PRH — IS

37.063 *0544* *C. albicosta* (Haw.) — Garvagh Forest C835159 (**H40**) 16.vi.2014, genitalia det. — KGMB

37.066 *0526* *C. laricella* (Hübn.) — Dunbrody S723101 (**H12**) 13.vi.2014, genitalia det. KGMB — MO'D

37.068 *0586* *C. adjunctella* Hodgk. — Glencaple NX994688 (**72**) 27.vi.2014, genitalia det. SMP — MRY, SMP, JRL

37.069 *0587* *C. caespititiella* Zell. — Aberystwyth SN6283 (**46**) 2014 RIS trap, male genitalia det. — PRH

37.070 *0583* *C. tamesis* Waters — Tramore saltmarsh S602008 (**H6**) 17.vi.2014, male genitalia det. KGMB — TB

37.071 *0582* *C. glaucicolella* (Wood) — Coed Pendugwm NR SJ103143 (**47**) 25.vi 2014, genitalia det. — D. Boyes *per* PRW; Brodick NS0138 (**100**) 2014 RIS trap, 4 males genitalia det. — PRH

37.072 *0578* *C. otidipennella* (Hübn.) — Craigmichan Scar NT1606 (**72**) 11.vii.2014, genitalia det. KPB — R. & B. Mearns *per* KPB; Creggan H624789 (**H36**) 14.vi.2014, genitalia det. — KGMB

37.074 *0581* *C. taeniipennella* (H.-S.) — Abereiddi SM802319 (**45**) case on *Juncus articulatus* 26.viii.2014, det. JRL from photograph — R. Taylor *per* ADL; Middletown SJ305121 (**47**) 17.vii.2014, genitalia det. — D. Boyes *per* PRW; Brodick NS0138 (**100**) 2014 RIS trap, male genitalia det. — PRH

37.076 *0580* *C. sylvaticella* Wood — Burfa Bank SO2861 (**43**) swept from *Luzula sylvatica* 17.v.2014 — PJC & VFC; Scots Gill Wood NR, Morpeth NZ183861 (**67**) cases on *Luzula sylvatica* 17.ix.2014 — A.J. Fairclough *per* TJT

37.080 *0564* *C. virgaureae* Staint. — Newtonmore Golf Course NN723984 (**96**) cases on seed heads of *Solidago virgaurea* 11.x.2014 — T Prescott *per* MT

37.082 *0562* *C. asteris* (Mühlig) — Beachley ST5490 (**34**) 22.viii.2014, female genitalia det. — GHJM

37.083 *0565* *C. saxicolella* (Dup.) — Llysdinam SO0058 (**42**) 2014 RIS trap, male genitalia det. — PRH

37.087 *0572* *C. vestianella* (Linn.) — Spurn NNR TA4115 (**61**) 16.vii.2014, genitalia det. — B. R. Spence *per* HEB

37.090 *0577* *C. artemisicolella* (Scott) — Odder, Lincoln SK942745 (**54**) cases on *Artemisia vulgaris* 6.ix.2014 — MJG

37.093 *0559* *C. peribenanderi* Toll — Aberystwyth SN6283 (**46**) 2014 RIS trap, male genitalia det. — PRH

37.099 *0553* *C. striatipennella* Nyl. — Foveran Dunes NK0024 (**92**) 11.vi.2014, male genitalia det. — MRY; Brodick NS0138 (**100**) 2014 RIS trap, 2 males genitalia det. — PRH

37.104 *0567* *C. adspersella* (Benander) — Apperley SO8528 (**33**) case on *Atriplex* sp. 18.ix.2014 — GHJM

37.107 *0589* *C. clypeiferella* Hofm. — Blaxton, SE6700 (**63**) 26.vii.2014, genitalia det. HEB — S.R. Sowden *per* HEB

37.108 *0588* *C. salicorniae* (Heinemann & Wocke) — Alnmouth Saltmarsh NU245101 (**68**) final instar cases on *Salicornia ramosissima* 23.ix.2014 — A.J. Fairclough *per* TJT

ELACHISTIDAE

38.001 *0590* *Perittia obscurepunctella* (Staint.) — Warton Crag SD4972 (**60**) 23.iv.2014, first documented VC record, male genitalia det. SMP — JAG

38.004 *0610* *Elachista argentella* (Clerck) — Hilton Demesne (west) H485209 (**H32**) 20.vi.2014 — KGMB

38.005 *0611* *E. triatomea* (Haw.) —Caerlaverock Marsh NY0465 (**72**) 28.vi.2014 — KPB

38.007 *0613* *E. subocellea* (Steph.) — Alsager SJ819545 (**58**) 14.vi.2014, genitalia det. — M.Dale *per* SHH

38.016 *0621* *E. subalbidella* Schläg. — Girley Bog N6970 (**H22**) 1.vi.2014 — EO'D

38.017 *0622* *E adscitella* (Staint.) — Wolves Wood TM0543 (**25**) 31.v.2014, genitalia det. J. Clifton — N. Sherman *per* AWP; Dolforwyn Woods SO158956 (**47**) 17.vii.2014, genitalia det. — D. Boyes *per* PRW

38.019 *0593* *E. regificella* (Sirc.) — Old Oswestry SJ294311 (**40**) many mines on *Luzula sylvatica* 18.iv.2014, conf. ANBS — D. Knight *per* AGB

38.025 *0597* *E. atricomella* Staint. — Rumster Forest ND212389 (**109**) 29.vi.2014 — NM; Derreen N088919 (**H29**) 21.vi.2014 — KGMB

38.028 *0599* *E. alpinella* Staint. — Bishop's Wood SU226200 (**8**) 5.ix.2014, first county record since 1897 — EGS & MHS; Gait Barrows NNR SD483774 (**60**) 25.vii.2014, first documented VC record, male genitalia det. — SMP; Clapham SD7469 (**64**) 16.viii.2013, genitalia det. SMP — T. Hutchinson *per* HEB; Gameshope NT133171 (**78**) 25.vii.2014, conf. MRY from photograph — J Woolliams *per* RS

38.033 *0603* *E. subnigrella* Dougl. — Warton Crag SD4972 (**60**) 12.vi.2014, first documented VC record, male genitalia det. SMP — BE, B. Hancock & SMP

38.036 *0606* *E. humilis* Zell. — Sharpthorne TQ374325 (**14**) 18.v.2014, genitalia det. AMD — P. Clark *per* CRP

38.037 *0607* *E. canapennella* (Hübn.) — Brodick NS0138 (**100**) 2014 RIS trap, 4 males genitalia det. — PRH; Abbeyfeale Townpark R106256 (**H8**) 19.iv.2014, genitalia det. — KGMB

38.038 *0608* *E. rufocinerea* (Haw.) —Loch Fell, Moffat Hills NT1605 (**72**) 11.vii.2014, genitalia det. KPB — R. Mearns *per* KPB

38.039 *0609* *E. maculicerusella* (Bruand) — Lochgoilhead NN197014 (**98**) mines, one with larva, on *Phalaris arundinacea* 25.vi.2014 — MRY, SMP & JRL

38.040 *0624* *E. trapeziella* (Staint.) — Hackfall Woods SE2377 (**64**) 6.vi.2014 — CHF

38.043 *0627* *E. scirpi* Staint. — Glencaple NX994688 (**72**) 27.vi.2014, genitalia det. SMP — MRY, SMP & JRL; Mill Bay J2513 (**H38**) 16.vi.2014, genitalia det. KGMB — K. Murphy *per* JMcC

38.045 *0629* *E. utonella* (Frey) — Brassey NR SP1322 (**33**) tenanted mine on *Carex paniculata* 17.iv.2014, moth bred — GHJM

38.046 *0630* *E. albidella* (Nylander) — Llanmerewig Glebe SO159928 (**47**) 16.vii.2014, genitalia det. D. Boyes — D. Boyes & PRW; Carlin's Cairn NX4989 (**73**) 30.vi.2014, det. KPB — R.& B. Mearns *per* KPB; Derreen Bog N091926 (**H29**) 20.vi.2014, genitalia det. — KGMB

38.047 *0631* *E. freyerella* (Hübn.) —Cairnsmore of Fleet NX5066 (**73**) 9.vii.2014, genitalia det. KPB — R. & B. Mearns *per* KPB

38.048 *0632* *E. consortella* Staint. — Llowes SO191417 (**43**) 12.v.2014, genitalia det. PJC — PJC & VFC

PARAMETRIOTIDAE

39.001 *0905* *Blastodacna hellerella* (Dup.) — Glencoe NN1156 (**98**) 2014 RIS trap, female genitalia det. — PRH; Kildary NH7775 (**106**) 8.vii.2014, conf. MRY — NGJR

MOMPHIDAE

40.001 *0885* *Mompha conturbatella* (Hübn.) — Undy ST438871 (**35**) 25.vi.2014, conf. SDSB — K. Jones *per* SDSB; Old Bridge of Tilt NN8766 (**89**) 18.vii.2014 — KPB; Brodick NS0138 (**100**) 2014 RIS trap, male genitalia det. — PRH

40.003 *0887* *M. lacteella* (Stephens) — Dolforwyn Woods SO158956 (**47**) 17.vii.2014, genitalia det. — D. Boyes *per* PRW

40.004 *0888* *M. propinquella* (Staint.) — Brodick NS0138 (**100**) 2014 RIS trap, male & female genitalia det. — PRH

40.006 *0890* *M. jurassicella* (Frey) — Dersingham TF6830 (28) 30.iii.2014, male genitalia det., first county record for over 100 years — R.E. Jones *per* JRW

40.007 *0889a* *M. bradleyi* (Riedl) — St Bride's ST299815 (**35**) 30.x.2014, male genitalia det. SDSB — M. Oxford *per* SDSB; Wheldrake SE6744 (**61**) 25.ix.2013 — J.O.H. Small *per* HEB

40.011 *0880* *M. langiella* (Hübn.) — Middletown SJ305121 (**47**) 16.v.2014, det. PRW — D. Boyes *per* PRW; Blackford Hill NT2570 (**83**) larva on *Epilobium montanum* 1.vii.2014, moth bred — KPB; Strokestown Hse Gardens M936808 (**H25**) mine on *Circaea lutetiana* 21.vi.2014 — KGMB

40.013 *0882* *M. locupletella* ([D. & S.]) — Nedd NC134329 (**108**) 8.vi.2014, genitalia det. RJH — R. Wolton *per* RJH

40.014 *0881* *M. terminella* (H. & W.) — Calgary, Isle of Mull NM3751 (**103**) mines on *Circaea lutetiana* 20.ix.2014 — KPB

40.015 *0883* *M. raschkiella* (Zell.) — Brodick NS0138 (**100**) 2014 RIS trap, 4 males & 2 females genitalia det. — PRH; Ballinruane Wood R397305 (**H8**) vacated mines

on *Chamerion angustifolium* 24.viii.2014 — KGMB; Teernakill North L948521 (**H16**) vacated mines on *Chamerion angustifolium* 11.ix.2014 — KGMB

BLASTOBASIDAE

41.003 *0874* *Blastobasis lacticolella* Rebel — Glasbury SO180390 (**43**) 26.vii.2014, genitalia det. VFC — PJC & VFC

41.004 *0873a* *B. vittata* (Woll.) — Finaghy J3169 (**H39**) 21.vii.2014, male genitalia prep. KGMB, det. JRL from photograph — C. Mellon *per* KGMB, **New to Ireland**

41.0041 *B. maroccanella* Amsel — Bracklesham SZ8097 (**13**) 18.viii.2010 & 7.xii.2013, det. JRL, genitalia preps R.J. Dickson, only positively identified in 2014 — D.F.J. Lee *per* JRL

41.005 *0875a* *B. rebeli* Karsh.& Sin. — Wilmslow SJ846824 (**58**) 19.vii.2014, det. SHH — N.Ginn *per* SHH

STATHMOPODIDAE

42.001 *0875a* *Pachyrhabda steropodes* (Meyr.) — Aberglasney Gardens SN579220 (**44**) 21.iv.2014 — C. Manley *per* SDSB

42.002 *0877* *Stathmopoda pedella* (Linn.) — Bell Lake Marsh SW621428 (**1**) 28.vi.2014 — G. Davis *per* LACT; Cwm Gignog, Hayscastle SM884247 (**45**) 18.vi.2014 — R. Taylor *per* ADL

SCYTHRIDIDAE

43.006 *0920* *Scythris potentillella* (Zell.) — East Wretham Heath TL9188 (**28**) larva confirmed by T. Baran from photograph — SDB *per* JRW

43.008 *0920a* *S. inspersella* (Hübn.) — Sandy Heath Quarry TL2049 (**30**) 4.vii.2014 — D. Buckingham *per* DVM

ALUCITIDAE

44.001 *1288* *Alucita hexadactyla* Linn. — Drumnaph NR C837039 (**H40**) 5.ix.2014 — KGMB

PTEROPHORIDAE

45.001 *1488* *Agdistis bennetii* (Curtis) — Holme TL191881 (**31**) 30 vii 2014, conf. BD & C. Hart — P. Horsnail *per* BD; Hadston Carrs, NU273000 (**67**) 24.viii.2014 — J. Swalwell*per* TJT

45.004 *1501* *Platyptilia gonodactyla* ([D. & S.]) — Logie Quarry NH7776 (**106**) 7.vi.2014, conf. MRY — NGJR

45.006 *1502* *P. isodactylus* (Zell.) — Stamullen O146662 (**H22**) 5.viii.2014 — EO'D

45.013 *1508* *Stenoptilia bipunctidactyla* (Scop.) — Cramalt Burn NT189242 (**78**) 1.vii.2014, conf. MRY from photograph — T. de Bordes *per* RS

45.039 *1519* *Hellinsia carphodactyla* (Hübn.) — Natural Surroundings TG0440 (**27**) 9.vi.2014, conf. J Clifton — G. Bond *per* JRW

45.041 *1520* *H. osteodactylus* (Zell.) — Murlough NR J4135 (**H38**) 27.vii.2014, genitalia det. JMcC — A. Crory *per* JMcC, **New to Ireland**

45.043 *1517* *Adaina microdactyla* (Hübn.) — Umbra NR C727358 (**H40**) 28.vi.2014, genitalia det. JMcC — A. Crory & E. McGuiggan *per* JMcC

SCHRECKENSTEINIIDAE

46.001 *0485* *Schreckensteinia festaliella* (Hübn.) — above Tobermory, Mull NM4854 (**103**) larval workings on *Rubus idaeus* & *Corylus avellana* 17.ix.2014 — KPB

EPERMENIIDAE

47.001 *0478* *Phaulernis fulviguttella* (Zell.) — Cors Goch NWWT SH502815 (**52**) 12.ix.2014 — ANG, JEG

47.004 *0484* *Epermenia aequidentellus* (Hofm.) — Burgh St Peter TM4792 (**27**) 30.x.2014, male genitalia det. J. Clifton — B. Jones *per* JRW; — St Anthony's, Llansteffan SN346099 (**44**) 15.vi.2014 — M. Jones *per* SDSB; Fountainstown W778585 (**H4**) 7.viii.2014 — KGMB

47.005 *0483* *E. chaerophyllella* (Hübn.) —Craobh Haven NM7907 (**98**) larvae on *Heracleum* 27.ix.2014 — KPB

CHOREUTIDAE

48.002 *0388* *Prochoreutis myllerana* (Fabr.) — Old Weston TL099774 (**31**) 20 vii 2014, conf. BD by genitalia dissection — K. Royles *per* BD; Duncow Woods NX9782 (**72**) 13.viii.2014, genitalia det. KPB — R. & B. Mearns *per* KPB

48.003 *0387* *P. sehestediana* (Fabr.) — North Cliffe Wood SE8637 (**61**) 6.vi.2014, genitalia det. HEB — A.D. Nunn *per* HEB

48.005 *0386* *Tebenna micalis* (Mann) — Clamerkin Farm SZ435905 (**10**) swept from *Pulicaria dysenterica* 23.vii.2014 — S. Plummer *per* IO; Botley Wood SU5309 (**11**) 6.ix.2014 — D. Houghton; Cockayne Hatley RIS trap TL2549 (**30**) 16-22.x.2014, genitalia det. DVM — I. Woiwod *per* DVM

48.008 *Choreutis nemorana* (Hübn.) — Hyde Park (**21**) larva on *Ficus carica* 6.vii.2014, moth bred — W. & J. De Prins *per* CWP, **New to the British Isles**, *Ent. Rec.* **126**: 157-163

TORTRICIDAE

49.001 *1013* *Olindia schumacherana* (Fabr.) — Shanklin SZ571810 (**10**) 10.vi.2014, conf. MJW — IO; Aberystwyth SN6283 (**46**) 2014 RIS trap, male genitalia det. — PRH; Glencoe NN112575 (**98**) 3.vii.2014 — D. Watson *per* AM; Camolin T060550 (**H12**) 18.vii.2014 — MO'D

49.005 *1006* *Epagoge grotiana* (Fabr.) — Derreen N088919 (**H29**) 21.vi.2014 — KGMB

49.008 *1008* *Philedone gerningana* ([D. & S.]) — Fauldhouse Moor NS927619 (**84**) 5.vii.2014 — MC; Girley Bog N698702 (**H22**)16. vii.2014 — EO'D

49.010 *1009* *Philedonides lunana* (Thunb.) — Croick NH4591 (**106**) 5.iv.2014, conf. MRY — NGJR; Ballycrystal S8351 (**H12**) 19.iv.2014 — MO'D

49.020 *0974* *Argyrotaenia ljungiana* (Thunb.) — Hog Hill NT525558 (**81**) 13.v.2014, det. MRY — E. Munro *per* BP

49.021 *0987* *Ptycholomoides aeriferana* (H.-S.) — Aberystwyth, Llangawsai SN594813 (**46**) 25.vii.2014, conf. IS from photograph — S. Cox *per* IS

49.023 *0971* *Pandemis cinnamomeana* (Treits.) — Keith Marischal NT448642 (**82**) 30.x.2014 — J. Wilson *per* MC

49.025 *0970* *P. cerasana* (Hübn.) — Derreen N088919 (**H29**) 21.vi.2014 — KGMB; Carnroe H504207 (**H32**) 20.vi.2014 — KGMB

49.029 *1002* *Lozotaenia forsterana* (Fabr.) — North Berwick NT575848 (**82**) 10.vii.2014 — K. Baird *per* MC; Kilkeeran M164726 (**H26**) 22.vi.2014 — KGMB

49.030 *0985* *Cacoecimorpha pronubana* (Hübn.) — Clone T241649 (**H12**) 18.vi.2014 — MO'D

49.032 *0990* *Aphelia unitana* (Hübn.) — NW of Condicote SP1330 (**33**) larvae on *Angelica sylvestris* 27.v.2013, 2 males reared, genitalia det.; subsequently also found in 4 more VC33 10km squares — GHJM; Wheldrake SE6944 (**61**) 18.vi.2013, genitalia det. — J.O.H. Small *per* HEB; Windy Ridge, Skelton NZ6513 (**62**)

11.vi.2014, genitalia det. R. Woods — S. Farish *per* HEB; Thorne Moors NNR SE7315 (**63**) 18.vi.2014, genitalia det. J.O.H. Small — R. Moat *per* HEB

49.033 *0988* *A. viburnana* ([D. & S.]) — Rough Bank BC reserve SO9008 (**33**) 21.vii.2014, male genitalia det. — GHJM

49.035 *0991* *Clepsis senecionana* (Hübn.) — Catfield Fen TG32Q (27) 30.iv.2014, conf. J. Clifton, first county record for over 100 years. — M. A'Court *per* JRW; Messingham SE5910030 (**54**) 06.v.2014 — J Davison *per* MJG; Camoge Bog M530313 (**H17**) 16.v.2014 — KGMB

49.0372 *C. dumicolana* (Zell.) — Chelsea (**21**) 15.v.2014 — P. Pires, **New to the British Isles**, *Ent. Rec.* **126**: 121-129; Longwick SP7805 (**24**) 21.v.2014 — A. Kershaw *per* MVA

49.039 *0998* *Epiphyas postvittana* (Walker) — Racks Moss NY0373 (**72**) 18.vi.2014, genitalia det. KPB — R. & B. Mearns *per* KPB; West Barns NT657784 (**82**) 28.vii.2014 —M. Quirrie *per* MC; Killavullen W645993 (**H5**) 30.viii.2014 — KGMB; Galway City M296251 (**H17**) 9.ix.2014 — KGMB

49.040 *1001* *Lozotaeniodes formosana* (Fröl.) — Aberystwyth University Penglais SN593815 (**46**) 1.vii.2014, conf. IS from photograph — S. Cox *per* IS

49.043 *1026* *Exapate congelatella* (Clerck) — Craig Maskeldie NO4078 (**90**) 10.x.2014 — PB; Grantown-on-Spey NJ029273 (**95**) 31.x.2014 — P Moore *per* MT; Barcaldine NM964414 (**98**) 16.xi.2014 — C. Craik *per* AM

49.047 *1030* *Eana. incanana* (Steph.) — Knockman Wood NX4068 (**73**) 12.vii.2014, det. KPB — K. Naylor *per* KPB

49.048 *1031* *E. penziana* (Thunb.) f. *colquhounana* — Aghinish N160683 (**H26**) 22.vi.2014 — KGMB

49.049 *1024* *Cnephasia incertana* (Treits.) — Knocknamanagh M526147 (**H15**) 25.vi.2014, genitalia det. — KGMB

49.056 *1019* *C. conspersana* Dougl. — Browhouses NY2865 (**72**) 11.vii.2014, genitalia det. KPB — K. Naylor *per* KPB

49.058 *1034* *Spatalistis bifasciana* (Hübn.) — Ciltwrch SO1540 (**43**) 14.vi.2014 — PJC & VFC; Minwear Woods SN047134 (**45**) 16.vi.2014 — R. Taylor *per* ADL; Skidby TA0133 (**61**) 2.vii.2014 — A. D. Nunn *per* HEB

49.060 *1032* *Aleimma loeflingiana* (Linn.) — Loch na Keal, Isle of Mull NM541391 (**103**) 13.vii. 2014, conf. MRY — C. Grindlay *per* AS

49.064 *1040* *Acleris caledoniana* (Steph.) — Cwar-du-bach, Bannau Sir Gar SN803215 (**44**) 11.ix.2014 — SDSB; Scotsburn Woods NH7277 (**106**) 15.viii.2014, conf. MRY — NGJR

49.067 *1059* *A. abietana* (Hübn.) — Wyre Forest SO746771 (**40**) one beaten from *Pseudotsuga menziesii* 1.x.2014 — ANBS

49.069 *1041* *A. sparsana* ([D. & S.]) — High Claonaig NR872568 (**101**) 19.ix.2014, conf. MRY — GHu

49.070 *1042* *A. rhombana* ([D. & S.]) — Strokestown House M936808 (**H25**) 8.ix.2014 — KGMB

49.073 *1047* *A. schalleriana* (Linn.) — Llanddewi SO103686 (**43**) 15.iii.2014, conf. PJC — I. Standen & R. Standen *per* PJC

49.075 *1052* *A. umbrana* (Hübn) — Mark's Corner SZ462920 (**10**) 7.xi.2014, det. MJW — I. Merrifield *per* IO

49.077 *1048* *A. variegana* ([D. & S.]) — Knocknamanagh M526147 (**H15**) 12.ix.2014 — KGMB; Drumnaph NR C837039 (**H40**) 5.ix.2014 — KGMB

49.083 *1044* *A. ferrugana* ([D. & S.]) — Tiverton SS965135 (**4**) 29.iii.2014, genitalia det., conf. BPH from photograph □ A.J. Cunningham *per* BPH

49.084 *1045* *A. notana* (Don.) — Blackness, Glen Esk NO463785 (**90**) 15.iv.2014, conf. MRY — PB; Tramore S577013 (**H6**) 28.ix.2014, female genitalia det. KGMB — TB

49.086 *1051* *A. logiana* (Clerck) — Askham Bryan SE5448 (**64**) 6.vii.2014 — D. Laughlin *per* HEB; Blackness, Glen Esk NO463785 (**90**) 1.iv.2014, conf. MRY — PB

49.089 *1057* *A. rufana* ([D. & S.]) — Portnalong, Isle of Skye NG344356 (**104**) 8.v.2014 — K Sadler *per* BN

49.091 *1011* *Pseudargyrotoza conwagana* (Fabr.) — Peebles NT249405 (**78**) 12.vi.2014, conf. MRY from photograph — J Woolliams *per* RS

49.097 *0936* *Cochylimorpha straminea* (Haw.) — Annaghmore West M621509 (**H17**) 8.ix.2014 — KGMB

49.108 *0930* *Gynnidomorpha alismana* (Ragonot) — Coombe Hill Canal SO8727 (**33**) 30.vii.2014, genitalia det. — P. Barden *per* RH; Shenton Estates SP394992 (**55**) 8.viii.2014 — R. Goff *per* APR

49.109 *0937* *Agapeta hamana* (Linn.) — Cloghalahard M426216 (**H15**) 25.vi.2014 — KGMB

49.113 *0952* *Commophila aeneana* (Hübn.) — Thurston TL9465 (**26**) 1.vii.2013 — T. Goodfellow *per* AWP

49.120 *0947* *Aethes smeathmanniana* (Fabr.) — Coldingham Bay NT917664 (**81**) 28.viii.2014, conf. MRY — BP; Melvich NC881648 (**108**) 9.vii.2014 — PRH *per* GC

49.127 *0945* *A. cnicana* (Westw.) — Kinneil Kerse NS966812 (**84**) 30.vi.2014 — MC; Carna (Rusheen) L798308 (**H16**) 24.vi.2014 — KGMB; Garvagh Forest C835159 (**H40**) 16.vi.2014 — KGMB

49.128 *0946* *A. rubigana* (Treits.) — Polmood NO580535 (**90**) 17.vii.2014, conf. MRY — PB

49.137 *0964* *Cochylis dubitana* (Hübn.) — Aberystwyth SN594813 (**46**) 28.vii.14 — S. Cox *per* IS; Derwenlas SN722991 (**47**) 3.viii.2014, det. PRW — A. Tadman, *per* PRW

49.138 *0964a* *C. molliculana* (Zell.) — Shifford SP3701 (**23**) 2014 RIS trap, male genitalia det. — PRH; St Bride's ST299815 (**35**) 19.ix.2014, conf. SDSB— M. Oxford *per* SDSB

49.142 *0960* *Falseuncaria ruficiliana* (Haw.) — Aultguish NH35570 (**106**) 9.vi.2014, det. MRY from photograph — H. Swift *per* MC; Francis Gap M595082 (**H15**) 28.v.2014 — KGMB

49.144 *1113* *Eudemis profundana* ([D. & S.]) —Mains of Cairnbrock NW9-6- (**74**) 25.vii 2014, det. KPB — K. Naylor *per* KPB, **New to Scotland**

49.150 *1093* *Apotomis betuletana* (Haw.) — Acarsaid, Eriskay. NF789098 (**110**) 20.vii.2014 — JBK; Girley Bog N698702 (**H22**) 16.vii.2014 — EO'D

49.159 *1085* *Hedya atropunctana* (Zett.) — UGL Range, Westdown SU0350 (**8**) 17.vii.2014 — EGS & MHS; Mains of Cairnbrock NW9-6- (**74**) 25.vii.2014, det. KPB — K. Naylor *per* KPB

49.161 *1063* *Celypha striana* ([D. & S.]) — Daliburgh, South Uist. NF732217 (**110**) 24.vi.2014 — JBK

49.169 *1069* *C. aurofasciana* (Haw.) — Lower Woods NR ST7387 (**34**) 3.vii.2014, female genitalia det. — GHJM

49.172 *1073* *Phiaris schulziana* (Fabr.) — Radnor Forest SO1964 (**43**) 11.vi.2014 — PJC & VFC

49.180 *1079* *Piniphila bifasciana* (Haw.) — Aberystwyth, Llangawsai SN594813 (**46**) 23.vii.2014, conf. IS from photograph — S. Cox *per* IS

49.183 *1108* *Lobesia abscisana* (Doubld.) — Maes yr Haf, Newport SN05713896 (**45**) 26.vii.2014 — ADL

49.185 *1109* *L. littoralis* (Westwood & Humphreys) — Telpyn Bay SN182073 (**44**) 22.ix.2014 — SDSB

49.186 *1097* *Endothenia gentianaeana* (Hübn.) — Pentre-coed SJ301272 (**40**) larvae in heads of *Dipsacus fullonum* 23.iii.2014, adults reared — D. Knight *per* AGB; Ffynnon Gynydd SO165419 (**43**) 29.iv.2014, conf. PJC — S. Mullard & J. Mullard *per* PJC

49.190 *1101* *E. ustulana* (Haw.) — Repps TG4217 (**27**) 18.vii.2014, male genitalia det. D. Hipperson — S. Wright *per* JRW; Gait Barrows NNR SD483774 (**60**) 25.vii.2014 female genitalia det. — SMP; The Argory H8758 (**H37**) 12.vii.2013, genitalia det. KGMB — K. Murphy *per* JMcC

49.193 *1104* *E. quadrimaculana* (Haw.) — Middletown SJ305121 (**47**) 29.vii.2014, genitalia det. — D. Boyes *per* PRW; Tromie Meadow, Insh Marshes NN787995 (**96**) 13.vii.2014, conf. by MRY from photograph — R. Arnfield *per* MT; Cloghalahard M426216 (**H15**) 25.vi.2014 — KGMB

49.195 *1110* *Bactra furfurana* (Haw.) — Hill of Ratter ND244733 (**109**) 28.vii.2014 — NM

49.196 *1111a* *B. lacteana* Caradja — Llysdinam SO0058 (**42**) 2014 RIS trap, male genitalia det. PRH & JRL — PRH

49.197 *1112* *B. robustana* (Christoph) — Mill Bay J2612 (**H38**) 17.vi.2014, genitalia det. KGMB — K. Murphy *per* JMcC

49.200 *1216* *Enarmonia formosana* (Scop.) — Pembrey Post Office SN427012 (**44**) 29.vi.2014 — H. John *per* SDSB; Middletown SJ305121 (**47**) 13.vi.2014, det. PRW — D. Boyes *per* PRW; Dunbrody S723101 (**H12**) 13.vi.2014 — MO'D

49.2001 *Tetramoera langmaidi* Plant — Southsea SZ655987 (**11**) 28.vii.2008 — JRL; Hertford (**20**) 17.vii.2014, genitalia det. — A. Wood *per* CWP, **New to science**, *Ent. Rec.* **126**: 164-174

49.201 *1117* *Ancylis unguicella* (Linn) —Beinn Bharrain, Arran NR8943 (**100**) 28.vi.2014, det. KPB — R. & B. Mearns *per* KPB

49.202 *1118* *A. uncella* ([D. & S.]) — Bouldnor Copse SZ383901 (**10**) 25.v.2014, det. T.J. Norriss — D. Cooke *per* IO; RSPB Sandy TL1847 (**30**) 30.v.2014 — D. Grundy *per* DVM; Logie Quarry NH7776 (**106**) 7.vi.2014, conf. MRY — NGJR

49.203 *1123* *A. laetana* (Fabr.) — Icklingham TL768733 and Mildenhall TL722745 (26) larvae on *Populus* x *canescens* 12.x.2014, previously unrecorded foodplant — BE & JRL; Minwear Woods SN047134 (**45**) 19.vi.2014 — R. Taylor *per* ADL

49.204 *1122* *A. obtusana* (Haw.) — Frenchpark M417143 (**H15**) 26.v.2014, genitalia det. — KGMB

49.207 *1119* *A. geminana* (Don.) — Linghope Burn NT178222 (**78**) 10.vi.2014, conf. MRY from photograph — T de Bordes *per* RS; Hill of Ratter ND244733 (**109**) 5.vi.2014 — NM; Camoge Bog M531310 (**H17**) 16.v.2014 — KGMB

49.209 *1119a* *A. diminutana* (Haw.) Longbridge Muir NY0470 (**72**) 21.v.2014, det. KPB — R. & B. Mearns *per* KPB, **New to Scotland**

49.220 *1162* *Rhopobota myrtillana* (H. & W.) —Kelhead Flow, Annan NY1470 (**72**) 30.v.2014, det. KPB — R. & B.Mearns *per* KPB

49.221 *1161* *R. stagnana* ([D. & S.]) — Glen Feshie NN847954 (**96**) 14.v.2014 — M Dale *per* MT; Aghalane H339196 (**H33**) 7.vii.2014, genitalia det. KGMB — K. Murphy *per* JMcC

49.224 *1205* *Spilonota ocellana* ([D. & S.]) — Pontrhydfendigaid, Coed Dolgoed SN734656 (**46**) 14.viii.2014, conf. PRH, first documented county record — E. Snell *per* IS

49.228 *1153* *Epinotia sordidana* (Hübn.) — Llanelwedd SO047524 (**43**) larva in spun leaf-pod on *Alnus glutinosa* 4.v.2014, moth bred — PJC& VFC

49.233 *1156* *E. solandriana* (Linn.) — Lower Stondon TL153347 (30) 20.vii.2014, first VC record since VCH (1904) — A.M. & M.G. Banthorpe *per* DVM

49.237 *1144* *E. signatana* (Dougl.) — Tennyson Down SZ324855 (**10**) 25.vi.2014, genitalia det. MJW — S. Plummer *per* IO; Wheldrake SE6944 (**61**) 20.vi.2014, genitalia det. HEB — J.O.H. Small *per* HEB

49.241 *1149* *E. crenana* (Hübn.) — Drimsynie NN191050 (**98**) larvae on *Salix aurita* 26.vi.2014, moths bred — MRY, SMP & JRL

49.242 *1145* *E. nanana* (Treits.) — Llandegley SO140616 (**43**) 18.vii.2014, conf. J. Clifton — J. Botting *per* PJC & VFC; Coed Pendugwm NR SJ103143 (**47**) 25.vi 2014, genitalia det. — D. Boyes *per* PRW; Dormont Loch, Dalton NY1075 (**72**) 3.vii 2014, male genitalia det. — R.& B. Mearns *per* KPB

49.244 *1132* *E. subocellana* (Don.) — Francis Gap M595082 (**H15**) 28.v.2014 — KGMB

49.246 *1130* *E. pygmaeana* (Hübn.) — Lake Vyrnwy SH9624 (**47**) 16.iv.2014, det. PRW — D. Boyes *per* PRW; Longbridge Muir NY0470 (**72**) 19.iv 2014, genitalia det. KPB — R. & B. Mearns *per* KPB

49.249 *1134* *E. ramella* (Linn.) — North Loch Eynort, South Uist. NF7928 (**110**) 26.viii.2014 — JBK

49.250 *1140* *E. nigricana* (H.-S.) — Glasbury SO180390 (**43**) 22.vi.2014, genitalia det. PJC conf J. Clifton — PJC & VFC, **New to Wales**

49.251 *1146* *E. rubiginosana* (H.-S.) — Tophill Low NR TA0748 (**61**) 18.v.2014 — M. Hodges *per* HEB

49.252 *1142* *E. tedella* (Clerck) — Sperrins (Mennarodda) H643916 (**H36**) 15.vi.2014 — KGMB

49.254 *1133* *E. bilunana* (Haw.) — Lanark NS88431 (**77**) 16.vi.2014 — J. Davis *per* MRY; Drone Moss NT845670 (**81**) 13.vi.2014, conf. MRY — BP

49.256 *1138a* *E. cinereana* (Haw.) — Wheatfen TG3205 (**27**) 16.viii.2014, genitalia det. D. Hipperson — K. Saul *per* JRW

49.257 *1166* *Zeiraphera griseana* (Hübn.) — Pontrhydfendigaid, Coed Dolgoed SN734656 (**46**) 14.viii.2014 conf. PRH, first documented county record — E. Snell *per* IS

49.259 *1163* *Zeiraphera ratzeburgiana* (Ratz.) — Gormonston O164664 (**H22**) 4.vii.2014 — EO'D

49.261 *1157* *Crocidosema plebejana* (Zell.) — Pembrey Post Office SN427012 (**44**) 8.vi.2014 — H. John *per* SDSB; Howick NU258178 (**68**) 24.viii.2014, almost certainly introduced from a packet of seeds bought at a Wilkinson's store. — S. Sexton *per* TJT; Murlough NR J4135 (**H38**) 3.xii.2014 — A. Crory *per* JMcC

49.264 *1202* *Eucosma obumbratana* (L. & Z.) —Browhouses NY2865 (**72**) 11.vii.2014, genitalia det. KPB — K. Naylor *per* KPB

49.269 *1197* *E. campoliliana* ([D. & S.]) — Commins Coch SH845028 (**47**) 13.vi.2014, det. D. Boyes — PRW

49.278 *1171* *Gypsonoma minutana* (Hübn.) — Childswickham SP0738 (**33**) 11.vii.2014 — O. Wadsworth *per* RH; Worcester SO883570 (**37**) 10.vii.2014 — S. Whitehouse *per* ANBS

49.279 *1169* *G. dealbana* (Fröl.) — Lochgoilhead NN1901 (**98**) 26.vi.2014 — MRY, SMP & JRL

49.283 *1167* *G. aceriana* (Dup.) — Clyro SO207423 (**43**) larvae in larval tubes on *Populus alba* 12.v.2014, moths bred — PJC & VFC

49.286 *1184a* *Epiblema cirsiana* (Zell.) — Acarsaid, Eriskay NF7909 (**110**) 20.vi.2014 — MRY, JEY, SMP, JBK & JRL

49.288 *1183* *E. foenella* (Linn.) — Aberlady NT459798 (**82**) 22.vii.2014 — J. Harrison *per* MC

49.293 *1180* *Notocelia tetragonana* (Steph.) — Dolforwyn Woods SO158956 (**47**) 17.vii.2014, genitalia det. —D. Boyes *per* PRW

49.298 *1176* *N. trimaculana* (Haw.) — Big Wood NT478262 (**79**) 7.vi.2014, conf. MRY — ML; Lochgoilhead NN197014 (**98**) 25.vi.2014 — MRY, SMP & JRL; Derreen N088919 (**H29**) 21.vi.2014, genitalia det. — KGMB; Aghadulla H377671 (**H36**) 19.vi.2014, genitalia det. — KGMB

49.305 *1210* *Rhyacionia buoliana* ([D. & S.]) — Hutton Conyers SE323733 (**65**) 18.vii.2014 — CHF

49.306 1211 *R. pinicolana* (Doubld.) — Bowness-on-Solway NY207618 (**70**) 30.vi.2014 — LS

49.307 *1212* *R. pinivorana* (L. & Z.) — Rumster Forest ND212389 (**109**) 29.vi.2014 — NM

49.313 *1279* *Dichrorampha acuminatana* (L. & Z.) — Foresters House, Brechfa SN524304 (**44**) 12.v.2014, male genitalia det. SDSB — A. Baird *per* SDSB; Bodelwyddan SJ019750 (**51**) 20.v.2014, det. PRW — A.J. Tadman *per* ANG

49.320 *1274* *D. alpinana* (Treits.) — Nosterfield LNR SE2799 (**65**) 18.vi.2014 — CHF & J C Warwick

49.329 *1266a* *Cydia illutana* (H.- S.) — Prestbury Hill SO9925 (**33**) 18.vi.2014 — O. Wadsworth *per* RH; Church Stretton SO453934 (**40**) at light 30.v.2014, conf. ANBS from photograph — G. J. Wenman *per* AGB

49.332 *1268* *C. coniferana* (Ratz.) — Tophill Low NR, TA0748 (**61**) 20.vii.2014 — M. Hodges *per* HEB; Girley Bog N698702 (**H22**) 16.vii.2014, genitalia det. KGMB — EO'D

49.334 *1267* *C. cosmophorana* (Treits.) — Rumster Forest ND205387 (**109**) 14.vi.2014 — NM

49.335 *1254* *C. strobilella* (Linn.) —Roslin Glen NT2762 (**83**) larva in *Picea* cone 12.iv.2014 — KPB

49.341 *1260* *C. splendana* (Hübn.) — Mains of Cairnbrock NW9-6- (**74**) 25.vii 2014, det. KPB — K. Naylor *per* KPB; Kilmartin NR836987 (**98**) 27.vii.2014 — D.C. Jardine *per* AM

49.342 *1259* *C. fagiglandana* (Zell.) — Coed Pendugwm NR SJ103143 (**47**) 25.vi 2014, det. PRW — D. Boyes *per* PRW

49.343 *1262* *C. amplana* (Hübn.) — Westward Ho! SS441291 (**4**) 25.vii.2014, conf. BPH from photograph —– P. Walton *per* BPH; Chorleywood TQ0296 (**24**) 1.viii.2014 — R. Ellis *per* MVA

49.345 *1219* *Lathronympha strigana* (Fabr.) — Loch Eynort North NF7928 (**110**) 21.vi.2014 — MRY, JEY, SMP, JBK & JRL

49.349 *1242* *Grapholita internana* (Guen.) — Skaithmuir, Fox Covert (**81**) 29.v.2014, conf. MRY — BP

49.3541 *1248* *G. molesta* (Busck) — Tramore S577013 (**H6**) indoors 29.iv.2014, conf. KGMB — TB

49.356 *1249* *G. lobarzewskii* (Now.) — Earith TL390751 (**31**) 2 vi 2014, conf. BD by genitalia dissection — D. Griffith *per* BD

49.357 *1247* *G. funebrana* (Treits.) — Talybont, Dol Pistyll SN656896 (**46**) 16.vii.2014 — IS

49.358 *1246* *G. tenebrosana* (Dup.) — Sapcote SP490937 (**55**) 18.vi.2014, genitalia det. A.J. Mackay — G. Calow *per* APR; Gameshope Glen NT1318 (**78**) 19.vi 2014, genitalia det. — KPB

49.359 *1245* *G. janthinana* (Dup.) — Aberystwyth, Llangawsai SN594813 (**46**) 16.vi.14, conf. IS — S. Cox *per* IS

49.360 *1223* *Pammene splendidulana* (Guenée) — Glenarm D3011 (**H39**) 22.5.2014, genitalia det. JMcC — E. Rolston *per* JMcC

49.361 *1228a* *P. ignorata* Kuznetzov — Llysdinam SO0058 (**42**) 2014 RIS trap, male genitalia det. L. Aarvik — PRH

49.362 *1227* *P. giganteana* (Peyerimhoff) — Crostwight Heath TG3430 (27) 17.iii.2014, male genitalia det. JRW, first VC record for over 100 years — M. A'Court *per* JRW; Middletown SJ305121 (**47**) 16.iii.2014, det. PRW — D. Boyes *per* PRW

49.363 *1228* *P. argyrana* (Hübn.) — Herring Head Wood SD639687 (**60**) 3.v.2014 — T.M. Whitaker *per* JAG

49.365 *1229* *P. albuginana* (Guen.) — Ffynnon Gynydd SO165419 (**43**) 20.v.2014 — S. Mullard & J. Mullard *per* PJC; Dolforwyn Woods SO158956 (**47**) 20.vi.2014, — D. Boyes *per* PRW

49.367 *1236* *P. fasciana* (Linn.) — Peebles NT249405 (**78**) 26.vi.2014, conf. MRY from photograph — J Woolliams *per* RS; East Knowe, Killern NS504852 (**86**) 17.vii.2014 — M. Culshaw *per* JTK

49.369 *1226* *P. agnotana* (Rebel) — King's Wood, St Austell SX007488 (**2**) 29.v.2014, genitalia det. — F. Johns *per* LACT; Saltdean TQ381044 (**14**) 17.iv.2014, conf. JRL — THF

49.370 *1224* *P. luedersiana* (Sorh.) —Longbridge Muir NY0570 (**72**) iv.2014, genitalia det. KPB — R. & B. Mearns *per* KPB

49.371 *1239* *P. rhediella* (Clerck) — Middletown SJ305121 (**47**) 17.v.2014, genitalia det. — D. Boyes *per* PRW; Hollands Boardwalk, Caerlaverock NY04655 (**72**) larvae in spun *Crataegus* berries 28.vi.2014 , moths bred — SEM

49.372 *1232* *P. populana* (Fabr.) — S of Bourton-on-the-Water SP1717 (**33**) 27.vii.2014, female genitalia det. — GHJM; Cors Dyfi NR SN705987 (**47**) 11.viii.2014, conf. PRW — M. Wagland *per* PRW; Kilpatrick T248666 (**H12**) 8.viii.2013 — MO'D

49.373 *1231* *P. spiniana* (Dup.) — Methwold TL7893 (28) 4.ix.2014, male genitalia det. J. Clifton, first county record for over 100 years — G. Geen *per* JRW; Blacktoft Sands SE8323 (**63**) 25.vii.2014 — L. & M.J. Pilsworth *per* HEB

49.374 *1235* *P. trauniana* ([D. & S.]) — Tilshead Down SU0247 (**8**) 7.vi.2014 — EGS & MHS; Thrupp SO8603 (**33**) 11.vi.2014 — P. Hugo *per* RH

49.376 *1233* *P. aurita* Raz. — Windy Ridge, Skelton, NZ6518 (**62**) 24.vii.2014, genitalia det. R. Woods — S. Farish *per* HEB; Beverley Wood, Great Smeaton NZ3406 (**65**) 30.vii.2014 — J. Edwards *per* HEB; Tramore S577013 (**H6**) 3.viii.2014, conf. KGMB — TB, **New to Ireland**

49.377 *1237* *P. germmana* (Hübn.) — Wolves Wood TM0543 (**25**) 31.v.2014, genitalia det. J. Clifton — N. Sherman *per* AWP

49.381 *1221* *Strophedra weirana* (Dougl.) — Coed Pendugwm NR SJ103143 (**47**) 25.vi 2014 — D. Boyes *per* PRW

49.382 *1222* *S. nitidana* (Fabr.) — Killoughrum S901416 (**H12**) 3.vii.2014, genitalia det. KGMB — MO'D

PYRALIDAE

62.001 *1428* *Aphomia sociella* (Linn.) — Latheronwheel ND186331 (**109**) 20.vii.2014 — NM; Kilkeeran M164726 (**H26**) 22.vi.2014 — KGMB; Clooncoe N108926 (**H29**) 21.vi.2014 — KGMB

62.005 *1426* *Achroia grisella* (Fabr.) — West Barns NT655781 (**82**) 28.vii.2014 — M. Quirrie *per* MC; East Knowe, Killern NS504852 (**86**) 24.vii.2014 — M. Culshaw *per* JTK; Dunbrody S723101 (**H12**) 13.vi.2014 — MO'D

62.007 *1433* *Cryptoblabes bistriga* (Haw.) — Kildary NH7775 (**106**) 21.vii.2014, conf. MRY — NGJR

62.021 *1441* *Oncocera semirubella* (Scop.) — Flitcham TF7427 (**28**) 12.vii.2014 — R.E. Jones & J. Swalwell *per* JRW

62.028 *1454* *Dioryctria abietella* ([D. & S.]) — Knocknamanagh M526147 (**H15**) 25.vi.2014; genitalia det. — KGMB

62.035 *1439* *Acrobasis advenella* (Zinck.) — Kilmartin NR836987 (**98**) 28.vii.2014 — D.C. Jardine *per* AM; South Glendale, South Uist NF791153 (**110**) 19.vii.2014 — JBK

62.048 *1470* *Euzophera pinguis* (Haw.) — Coch y Barlys, Llangain SN385139 (**44**) 28.vii.2014 — M. Jones *per* SDSB; Merepool, Stackpole SR971939 (**45**) 3.viii.2014 — R. Taylor *per* ADL

62.050 *1469* *E. cinerosella* (Zell.) — Cockayne Hatley RIS trap TL2549 (**30**) 1-7.viii.2014, genitalia det. DVM — I. Woiwod *per* DVM

62.059 *1484* *Phycitodes saxicola* (Vaughan) — Lerwick HU475412 (**112**) 31.vii.2014, genitalia det. J. Clifton — P. Harris & R. Nason *per* PH

62.061 *1478b* *Vitula biviella* (Zell.) — Irchester CP SP9066 (**32**) 1.viii.2014, genitalia det. DVM — J. Skinner *per* DVM

62.062 *1479* *Plodia interpunctella* (Hübn.) — Locks Park Farm, Hatherleigh SS518022 (**4**) one indoors 28.ii.2014 — R. Wolton *per* RJH

62.069 *1432* *Anerastia lotella* (Hübn.) — Old Weston TL099774 (**31**) 18 vii 2014, conf. BD by genitalia dissection — K. Royles *per* BD

62.076 *1415* *Hypsopygia glaucinalis* (Linn.) — Keith Marischal NT448642 (**82**) 5.viii.2014 — J. Wilson *per* MC

CRAMBIDAE

63.005 *1365* *Pyrausta despicata* (Scop.) — Fannich Glen NH2766 (**106**) 14.vi.2014, det. NGJR — MC

63.009 *1366* *P. nigrata* (Scop.) — Old Weston TL099774 (**31**) 18 vii 2014. conf. BD — K. Royles *per* BD

63.014 *1370* *Sitochroa palealis* ([D. & S.]) — Fair Isle HZ222723 (**112**) 24.vi.2014 — D. & S. Parnaby & N.J. Riddiford, **New to Scotland**, *Atropos* **52**: 68-69

63.016 *1386* *Anania fuscalis* ([D. & S.]) — Gameshope NT137184 (**78**) 12.vi.2014, conf. MRY from photograph — M Lindsay *per* RS; Kilkeeran M164726 (**H26**) 22.vi.2014 — KGMB

63.017 *1377* *A. lancealis* ([D. & S.]) — Owston SE5511 (**63**) 22.vi.2014 — M. Prior *per* HEB

63.018 *1378* *A. coronata* (Hufn.) — Kilkeeran M164726 (**H26**) 22.vi.2014 — KGMB

63.020 *1380* *A. perlucidalis* (Hübn.) — Glyn Road, Penallt SO527100 (**35**) 24.vi.2014 — I. Rabjohn *per* SDSB

63.021 *1379* *A. terrealis* (Treits.) — Greenland, Caithness ND247669 (**109**) 14.vi.2014 — P Wright *per* NM

63.022 *1385* *A. crocealis* (Hübn.) — Nosterfield LNR SE2799 (**65**) 18.vi.2014 — CHF & J C Warwick

63.025 *1376* *A. hortulata* (Linn.) — Kilkeeran M164726 (**H26**) 22.vi.2014 — KGMB; Culhame C882151 (**H40**) 16.vi.2014 — KGMB

63.026 *1374a* *Sclerocona acutellus* (Eversmann) — Bromham TL004510 (**30**) 5.vii.2014 — M. Harrison *per* DVM

63.031 *1395* *Udea ferrugalis* (Hübn.) — Polmood NO580535 (**90**) 15.xi.2014 — PB

63.032 *1389* *U. fulvalis* (Hübn.) — Bexhill TQ715080 (**14**) 11.vii.2014 — S. Pemberton *per* CRP

63.037 *1392* *U. olivalis* ([D. & S.]) — Derreen N088919 (**H29**) 21.vi.2014 — KGMB

63.039 *1396* *Mecyna flavalis* ([D. & S.]) — Axminster SY299985 (**3**) 18.vii.2014, conf. BPH from photograph — O. Woodland *per* BPH

63.042 *1397a* *Diplopseustis perieresalis* (Walk.) — Bawdeswell TG0420 (**27**) 10.vi.2014, likely to have migrated from a garden centre half a mile away — D. Appleton *per* JRW

63.044 *1403* *Diasemiopsis ramburialis* (Dup.) — Shenton Estates SP392993 (**55**) 8.viii.2014 — S. Smith *per* APR

63.046 *1403a* *Duponchelia fovealis* (Zell.) — Kirkby Thore NY640258 (**70**) indoors 28.ii.2014 det. SMP — R. Ansell-Davies *per* GHe

63.047 *1404* *Spoladea recurvalis* (Fabr.) — Leckford SU3737 (**12**) 31.x.2014 — G.C. Evans *per* MJW; Murlough, Stableyard, J413351 (**H38**) 31.x.2014 — A. Crory *per* JMcC

63.048 *1408* *Palpita vitrealis* (Rossi) — Eaton Ford TL176604 (**30**) 24.x.2014 — A.A. Lawrence *per* DVM; Tadcaster SE4843 (**64**) 31.x.2014 — D. Baker *per* HEB

63.054 *1409a* *Cydalima perspectalis* (Walk.) — Spofforth SE3651 (**64**) a melanic example 24.vii.2014 — A. Draper *per* HEB

63.057 *1356* *Evergestis forficalis* (Linn.) — Derreen N088919 (**H29**) 20.vi.2014 — KGMB

63.058 *1357* *E. extimalis* (Scop.) — Greenland, Caithness ND247669 (**109**) 20.vii.2014 — P Wright *per* NM, **New to Scotland**

63.060 *1358* *E. pallidata* (Hufn.) — Drumelzier Burn NT136338 (**78**) 22.vii.2014, conf. MRY from photograph — J Woolliams *per* RS

63.065 *1335* *Scoparia ancipitella* (La Harpe) — Williamhope SSSI NT417335 (**79**) 6.viii.2014, conf. MRY — ML; Eyemouth, The Crummels (**81**) 13.vii.2014, conf. MRY — BP

63.066 *1333* *S. pyralella* ([D. & S.]) — Glenkinnon SSSI NT419335 (**79**) 15.vi.2014, conf. MRY — ML

63.071 *1837* *Eudonia lineola* (Curt.) — Clone T241649 (**H12**) 9.vii.2014 — MO'D; Ninch O147712 (**H22**) 19.vii.2014 — EO'D

63.072 *1343* *E. delunella* (Staint.) — Parkhurst Forest SZ4792 (10) 5.vii.2014, det. T.J. Norriss, first county record since 1909 — I. Merrifield *per* MJW

63.074 *1344* *E. mercurella* (Linn.) — West Barns NT657784 (**82**) 21.vii.2014 — M. Quirrie *per* MC

63.075 *1336* *E. pallida* (Curt.) — Annaghmore West M621509 (**H17**) 8.ix.2014 — KGMB

63.0761 *1289a* *Euchromius cambridgei* (Zell.) — Thames Ditton (**17**) 12.vi.2014, conf. M.R. Honey — B. Dykes

63.079 *1292* *Calamotropha paludella* (Hubn.) — Boating World, Landrake SX3758 (**2**) 18.vii.2014, det. B.P. Henwood — M.R.T. Love *per* LACT; Middleton LWT SD416591 (**60**) 6.vii.2014, male genitalia det. — JAG

63.081 *1294* *Crambus pascuella* (Linn.) — Aghinish N160683 (**H26**) 22.vi.2014 — KGMB; Derreen Bog N091926 (**H29**) 20.vi.2014 — KGMB

63.083 *1297* *C. uliginosellus* (Zell.) — Cleggan L598582 (**H16**) 23.vi.2014 — KGMB; Girley Bog N698702 (**H22**) 16.vii.2014 — EO'D

63.086 *1301* *C. lathoniellus* — (Zinck.) — Aghinish M160683 (**H26**) 22.vi.2014 — KGMB

63.100 *1314* *Catoptria margaritella* ([D. & S.]) — Hempsted, Gloucester SO8218 (**33**) 3.vii.2014 — G. Avery *per* RH; Aberlady NT459798 (**82**) 29.vii.2014 — J. Harrison *per* MC; Lough Antraicer H554414 (**H32**) 6.ix.2014 — KGMB

63.102 *1316* *C. falsella* ([D. & S.]) — Welsh Hook SM933270 (**45**) 31.vii.2014 — R. Taylor *per* ADL; Ninch O147712 (**H22**) 23.vii.2014 — EO'D

63.103 *1317* *C. verellus* (Zinck.) — St Agnes, Isles of Scilly SV8808 (**1**) 22.vii.2014, genitalia det. J. Clifton — M.E. Hicks *per* LACT; West Bexington SY5387 (**9**) 18.vii.2014 — D. Foot *per* LJH

63.118 *1350* *Nymphula nitidulata* (Hufn.) — Woodhall Dean NT681728 (**82**) 25.vii.2014 — MC; Chapelton Marsh, Forres NJ048573 (**95**) 29.vii.2014 – J. Hammond *per* MT; Melvich NC881648 (**108**) 20.vii.2014 — GC

63.119 *1355a* *Musotima nitidalis* (Walker) — Nutfield TQ3050 (**17**) 15.xi.2014 — R.J. Bartlett *per* GAC

CORRECTIONS

to the 2006 Review

The following record should be deleted due to misidentification:

43.011 *0919* *Scythris cicadella* (Zell.) — Coopers Hill TL0237 (**30**) 25.vi.2006, genitalia det. — DVM

The record should be replaced with:

43.006 *0920* *Scythris potentillella* (Zell.) — Coopers Hill TL0237 (**30**) 25.vi.2006, genitalia det. Bengt Bengtsson — *per* DVM

to the 2010 Review

The following record has been withdrawn due to misidentification

49.258 1164 *Zieraphera rufimitrana* (H. – S.) — Storrington TD078142 (13) 10.vii.2010, genitalia det. — RMP

to the 2013 Review

20.006 *0407* *Argyresthia dilectella* (Zell.) — change locality to Painswick Common SO8611

20.007 *0409b* *A. cupressella* (Wals.) — change locality to Prestbury, Cheltenham SO9623.

Hellinsia osteodactylus (Zeller, 1841) (Lep.: Pterophoridae) larvae feeding on two previously unrecorded Compositae species in Northumberland

Hart (2011. *British Plume Moths*: 117-119), cites the British larval foodplants of the Small Goldenrod Plume *Hellinsia osteodactylus* (Zell.) as Goldenrod *Solidago virgaurea* and Ragwort *Senecio jacobaea*. The latter was assumed to be the primary foodplant in Northumberland, where all recent records have been in the south-east of VC 67 in an area where Goldenrod is absent. However, in October 2014 seed heads of Sea Aster *Aster tripolium* collected from the Wansbeck estuary yielded five plume larvae that closely matched the description for *H. osteodactylus*. A few days later, seed heads of plants superficially resembling Goldenrod, but later identified as stunted *Hieraceum vagum* were collected on a brown-field site a few kilometres north at Lynemouth and these produced eighteen similar larvae. Colin Hart was consulted, who suggested that the larvae should be bred through in case another species was involved. Following his advice, the larvae were successfully overwintered and adults bred from both foodplants during July 2015. These were confirmed as *H. osteodactylus* by Colin Hart and Tom Tams, the County Moth Recorder, who additionally dissected an unusually plain male, finding it consistent with the species. I wish to thank local botanist Richard Poppleton for keying out the *Hieracium* species for me from 2015 plants in flower.

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Caradrina clavipalpis infested with *Cheletomorpha lepidopterorum*

Within a haul of 41 moths of 12 species to my garden moth trap on 17 September 2015 was a Pale Mottled Willow *Caradrina clavipalpis*. This is not unsual, but this particular specimen was covered with orange blotches on both upper wing and underwing, which I had not witnessed before; in all, there were over 50 spots. Upon closer inspection it was noted that several fell off as the moth was potted and fridged. Maybe pollen? Several photos were taken. Fortuitously, a few days later I read the recent paper in this journal by Baker and Leverton (*Antea* 168 – 175), detailing infestations of the mite *Cheletomorpha lepidopterum* on several macro moth species, especially *Caradrina clavipalpis*. Interesting reading and clearly the answer to my question as to what I had discovered on the moth.

Baker & Leverton state that the mite can be found in hay bales where its food stuff is made up of the fungivorous mites of the family *Acaridae*. The old name for the *Caradrina clavipalpis* was Hay Moth, as the eggs are laid on hay where the larvae feed within the bales. Consequently, it is therefore susceptible to becoming infested with the mites of *C. lepidopterum* in a phoretic manner (i.e. transport only).

Upon removing my moth from the fridge and setting it for an improved photograph, it was noted that more of the mites became dislodged from the host. Clearly, the colder temperatures had made them become torpid and unable to grasp the host successfully. As can be noted from Plate 1, only about 20% of the mites were dislodged.

Plate 1. *Caradrina clavipalpis* (Noctuidae) infested with *Cheletomorpha lepidopterum* (Acari: Cheyletidae), Little Hadham, Hertfordshire, 17.ix.2015. Photograph J. Forgham.

Leverton has been studying the relationship between *C. lepidopterum* and macro moths and has observed phoretic relationships with Pale Mottled Willow, Dark Arches *Apamea monoglypha* (Hufn.), Smoky Wainscot, *Mythimna impure* (Hb.) , Lempke's Gold Spot *Plusia putnami gracilis* (Lempke), Dotted Clay, *Xestia baja* (D.& S.), Lesser Yellow Underwing *Noctua comes* Hb., Large Yellow Underwing *Noctua pronuba* (L.), Double Dart *Graphiphora augur* (Fabr.), Pearly Underwing *Peridroma saucia* (Hb.) and an uncontrolled laboratory test with a Lackey *Malacosoma neustria* (L.).

Further studies need to be carried out to discover whether the mite can remain alive within a moth trap long enough to then infest new visitors before being carried to a new habitat as well as how they select their host. Records show only a few species, mentioned above, being utilised as a host and it has to be presumed that most of these were infested as they roosted upon hay bales stored at farms. It is interesting to note that my trap is some 250 metres from a hay farm where large numbers of bales are stored in barns as well as outside, the latter being rolled in agricultural wrap to keep them dry throughout the winter months.

It may well prove a useful investigation if a small light trap were to be set within the barn on the farm as from July next year to ascertain what species use the barn and what percentage become infested. This record is the latest to be reported and further study needs to be carried out both at the barn and within the moth trap to see if mites remain. So far, no other specimens have been noted and the trap appears to be clear of the mite. It appears that temperature is an important factor in the life of *C. lepidopterum* and it is of interest that the nights of 16 and 17 September were unseasonably warm, having followed a run of five colder nights previously. The fact that a percentage became dislodged following a spell in the fridge also indicates lack of ability to deal with colder temperatures. Consequently, further investigation into the relationship between host and temperature could prove interesting and further the knowledge of a mite that has been known to science since 1794.

I would be keen to hear from fellow lepidopterists who have come across an infestation of *C. lepidopterum* at my addresses below.

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Bordered Grey *Selidosema brunnearia* (Villiers) (Lep.: Geometridae) at St. Cyrus, Kincardineshire, with a previously unrecorded foodplant in Britain

Bordered Grey *Selidosema brunnearia* is a good example of a species with a discontinuous distribution in Britain, despite an ability to occupy very different types of habitat. Its main centres are the heathlands of the New Forest in Hampshire and in Surrey, but it is also found on chalk downland in Dorset and on sand dunes at Hayling Island, Hampshire. In northern England it occurs on the mosses of south Cumbria (Waring, P. & Townsend, M., 2009. *Field Guide to the Moths of Great Britain and Ireland*. British Wildlife Publishing). In Scotland it occurs very locally on the west coast, more widely in the Inner Hebrides and on South Uist in the Outer Hebrides (Butterfly Conservation East Scotland Branch website, moth records, maps and dates). Anomalously, there is one isolated colony, about 200km from any other, on the east coast of Scotland. This is on the extensive sand dune system at St. Cyrus National Nature Reserve, close to the southern boundary of Kincardineshire. It is the only eastern colony in Britain.

Bordered Grey was discovered at St. Cyrus by E. C. Pelham-Clinton, who found 'several' moths in 1961 (Palmer, R. M., 1975. Lepidoptera of Aberdeenshire and Kincardineshire, Part 2. *Ent. Rec. J. Var.* **87**: 218-224). Subsequent records followed at long intervals: 1972, 18.viii.1974, 24.viii.1978 and 17.viii.1987 (Brian Stewart, Kincardineshire County Moth Recorder, pers. comm.). When, on 2 August 2003, RL visited St. Cyrus with Mark Young in the hope of seeing Bordered Grey, none had been recorded for 16 years and there were fears it had been lost. Fortunately the weather was perfect. After dark there were literally thousands of moths nectaring on Common Ragwort *Senecio jacobaea* flowerheads. They included a male Bordered Grey, found in the dunes towards the northern end of the reserve, confirming the species was still present.

Even so, it was to be another 10 years before the next sighting, despite increased trapping. Brian Stewart worked the reserve regularly from 2006-2012, using light traps and dusking. However, he mostly trapped near the visitor centre at the southern end of the reserve, rather than out in the dunes to the north-east (pers. comm.). From 2008, PB was able to work St. Cyrus far more regularly than any previous observer, since he lives in nearby Montrose. These efforts resulted in many new additions to the St. Cyrus moth list, but Bordered Grey was not seen. Once again, there were fears it had been lost from the site.

Then on 10 August 2013 a single male Bordered Grey came to a light trap PB had placed in the dunes, in the hope of recording this species for National Moth Night. It landed on one of the participants and was quickly potted, but no more arrived. To try for further sightings, on 16 August 2013 PB ran a light trap in similar habitat about 150m to the north, but without success. He left the trap and began to search the nearby dunes by torchlight. Fairly quickly, a male Bordered Grey was found on a seed head of Marram *Ammophila arenaria* at the seaward edge of the dunes. Shaded Broad-bar *Scotopteryx chenopodiata* were flying in good numbers and also settling on the Marram heads, presumably attracted by secretions from an ergot. This prompted a

Plate 1. Bordered Grey *Selidosema brunnearia* Two aspects of final instar larva, 2 June 2014, St. Cyrus NNR, Kincardineshire (photograph R. Leverton).

careful search. Along a route of approximately 500m, 10 Bordered Grey males were found on the Marram heads, apparently feeding. They were randomly distributed with no obvious concentrations.

The next task was to ascertain the foodplant. Heather *Calluna vulgaris* and heaths *Erica* sp., the usual foodplants in Britain, are absent from the dunes. Bird's-foot trefoil *Lotus corniculatus*, an alternative foodplant, is present but not especially abundant. A far more notable feature of the area where the moths were found is Common Restharrow *Ononsis repens*, the dominant herb in some places. Elsewhere in Europe this is a known foodplant of Bordered Grey (Porter, J., 1997. *Colour Identification Guide to Caterpillars of the British Isles*. Viking.) and RL had long suspected it was being used at St. Cyrus. Plans were made to search for larvae the following year.

Restharrow is widely spread across the central parts of the reserve. It is at its most dense close to the seaward edge of the dune system, particularly in the lee of the bank that the most recently formed dunes provide. This area is where the moths were found in 2013. PB made two preliminary visits in May 2014. On the first visit in mid May, the Restharrow was barely showing above the underlying mossy base. On the second visit in late May the plant was more in evidence although still rather scant, so the decision was taken to postpone the search.

By PB's third visit on 1 June 2014 the Restharrow had grown taller and denser. Searching began at dusk, approximately 23.15 hours BST, but the first Bordered Grey larva was not found until a good hour after full darkness had fallen. Others quickly

Plate 2. Bordered Grey *Selidosema brunnearia* male, ex larva 2 June 2014, St. Cyrus NNR, Kincardineshire (photograph R. Leverton).

Plate 3. Bordered Grey *Selidosema brunnearia* female, ex larva 2 June 2014, St. Cyrus NNR, Kincardineshire (photograph R. Leverton).

followed. By far the majority were on the upper stems of the restharrow, feeding on the tender new growth at the tips. Once the first had been spotted they were surprisingly easy to see in the torchlight, being a very pale brown that contrasted starkly with the leaves on which they fed (Plate 1). On the other hand, this colouration would be cryptic if they rested by day on the sandy substrate beneath the restharrow, or amongst the Marram stems.

In total, 15 larvae were found during this night's search, all apparently in their final instar with some nearing full growth. A second search of the same area on 3 June 2014 produced a further 17 larvae, with five more during a briefer search on 11 June 2014. All were found along a 300m stretch of a narrow path running parallel with the dune bank about 15m inland of its crest. Marram encroaches from the outer dunes into this sheltered strip and together with restharrow comprises most of the vegetation. All 37 larvae were found on the seaward side of the path. None was found on the landward side where both restharrow and Marram were less dominant. Other plants present included vetches and ragwort, but not in any quantity, nor were any Bordered Grey larvae found on them.

A few of the larvae were retained and reared to confirm their identity beyond doubt. This proved wise, because several smaller larvae that appeared to be earlier instars turned out to be Shaded Broad-bar instead; these are not included in the above totals. The others were indeed the correct species. Those reared by RL pupated in soil without making any cocoon and adults emerged at the end of July. They were deeply coloured and strongly marked, with a large wingspan difference between males and the shorter-winged but stocky females, as appropriate for subspecies *scandinaviaria* Staudinger (Plates 2 & 3). The pupae of both sexes were of equal size.

Common Restharrow is previously unrecorded as a foodplant of Bordered Grey in Britain, but it is clearly important for final instar larvae at St. Cyrus and perhaps explains the very existence of this unusual colony. However, it cannot be the only foodplant there, since it dies down completely in autumn and does not reappear until late spring, yet Bordered Grey overwinters in the larval stage. The progeny from the reared St. Cyrus moths readily ate *Lotus* on hatching. They were then surprisingly easy to overwinter when sleeved on potted ornamental heathers as recommended by Porter (*loc. cit.*), begging the question of why this is such a localised moth in the wild.

Although we failed to answer that question, at least the status of Bordered Grey at St. Cyrus is now resolved. Far from teetering on the verge of extinction, as the scanty light trap records seemed to indicate, there is a thriving colony in the dunes where Restharrow dominates the vegetation. One night's properly targeted fieldwork had taught us more than fifty years of casual light-trapping. It is pleasing that there are occasions when traditional methods pioneered by the Victorians can still trump modern technology.

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A SIGNIFICANT RANGE EXTENSION OF *ERANNIS DECLINANS* (STAUDINGER, 1879) IN EUROPE (LEP.: GEOMETRIDAE)

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Abstract

Erannis declinans (Stdgr, 1879) (Lep.: Geometridae) is reported as a new species for the Republic of Serbia, from near Bela Palanka. At present this is the most western locality for this species. Some new localities for this species within Bulgaria are given and the Bulgarian distribution is mapped.

Keywords: Geometridae, Serbia, Bulgaria, faunistics.

Previous data

Erannis declinans is a species about which very little is known of its pre-imaginal stages, biology and even distribution. The only descriptions of the larva and the adult female, with minimal data on biology and food plants, are in the Russian language in an Armenian Journal (Vardikyan, 1949). *Erannis declinans* was described as *Hybernia declinans* by O. Staudinger from Turkey, Amasia and Taurus Mountains and not from Dagestan as is stated in Rakosy & Szekely (1996: 35). Its range covers Bulgaria, Romania, Turkey and Middle East (Leraut, 2009: 126-127 and at *www.faunaeur.org/distribution_table.php*). According to Rakosy & Szekely (1996: 35) it is known from Transcaucasia (Dagestan), Turkmenia (Kopet Dagh Mountains), Turkey, Northern Iran and Russia (Gorki and Baikal). As a pest species on wild and cultivated trees, it is reported from Armenia, Arax River Valley (Vardikyan, 1949). It was considered very likely to be present in northern Greece, but published records are unknown to the present author. However, at the Congress of Societas Europaea Lepidopterologica in Lednice (Czech Republic) during September 1994, someone showed to Barry Goater a monochrome picture of two unidentified Geometridae species collected in Northern Greece, asking for identification. Barry showed these to me and I was able to recognise immediately that these were *Erannis declinans* and *Agriopis beschkovi*. There can be little doubt that *Erannis declinans* is present but overlooked in the Republic of Macedonia also. In Romania it is known from Dobrogea (Canaraua Fetii, UTM Code 35TNJ48), very close to the border with Bulgaria (Rakosy & Szekely, 1996: 35; Szekely, 2011: 101, 192).

Male genitalia are illustrated in Rakosy & Szekely (1996: 36). Here genitalia of the specimen from Serbia are illustrated (Plate 1). According to Szekely (2011: 101) and many virtual sources its biology is unknown. Vardikyan (1949: 139-141) first described the caterpillar and illustrates both sexes. Here I offer a translation of the Russian descriptions of the larva and female: "*Larvae are up to 35 mm long, covered by fine hairs. They are grey with three dark longitudinal lines and dark lateral oval spots. Middle line has arched dark spots. In nature they can be found throughout May,*

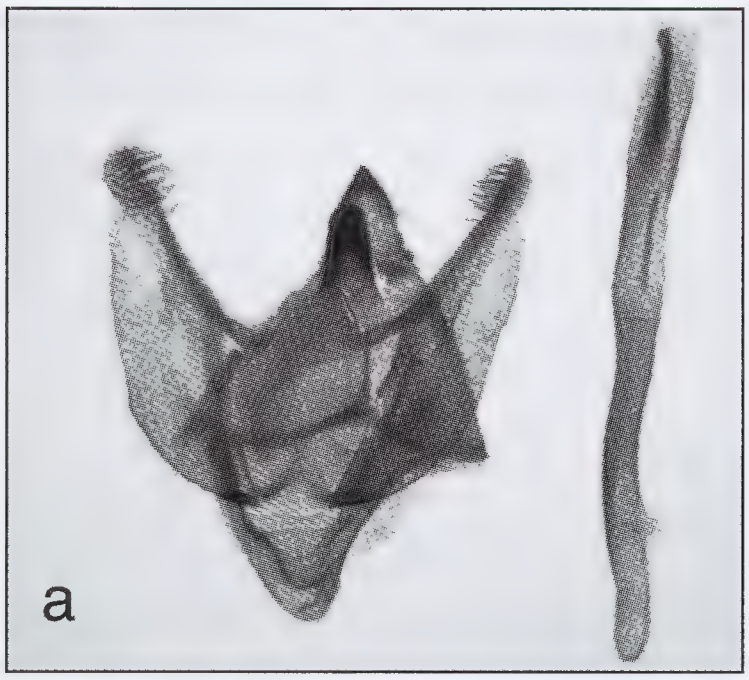


Plate 1. *Erannis declinans*. Eastern Serbia, between Bela Palanka Town and Donja Glama Village, 9.xi.2014, S. Beshkov leg., in coll. National Museum of Natural History, Sofia (NMNHS). a. male genitalia, Gen. prep. 1/11.xii.2014, S. Beshkov; b. adult male.

active at night, in captivity all larvae pupated in the middle of June … Females are wingless, very similar to Erannis defoliaria *L., dark grey, last abdominal segment with orange colour*".

According to Vardikyan (1949: 139-141) food plants of the larvae in nature are *Ulmus* sp., *Prunus divaricata*, *Armeniaca vulgaris*, *Amygdalus fenzliana, Prunus salicifolia*, *Crataegus orientalis*, *Spiraea* sp. and perhaps other plants. In captivity they accept also *Prunus persica, Cornus mas* and *Pyris sp*. Since the different food plants represent several families, it seems that *Erannis declinans* is polyphagous on leaves of trees and bushes.

It is strange that in the recent literature (Leraut, 2011 and virtual sources) that the food plant and larvae are stated as unknown, although the type material of *Erannis declinans* originated from caterpillars collected on "Stachelstrauch" – a German word meaning both *Paliurus spina-christi* and *Prunus spinosa*. Perhaps this is the reason why both Karnoschitzky (1954: 184-187) and Nestorova (1998: 141) list "*Paliurus* sp." as the caterpillar's food plant?

Karnoschitzky (1954: 185-186) reported adult males collected in number at night on *Paliurus*, *Rosa* [*canina*] and *Ulmus* bushes near Varna town. According to him all specimens were collected sitting on bushes, whilst "the other species of *Hybernia*, for example *bajaria, defoliaria, aurantiaria* were all flying and attracted to light". He even described one new form named *Hybernia declinans* ab. *zlatarskii*. This form is illustrated in monochrome in the primary source and the type material is available at both *http://nmnhs.com/e-natura/types-bulgaria/type_id_en-NMNHSINV0373.html* and *http://nmnhs.com/e-natura/types-bulgaria/type_list_institution_en-NMNHS-INV-p-36.htm*.

Localities for *Erannis declinans* in Bulgaria

Published (half-filled circles in Map 1):

34TFL89: Kozhouh — Ganev (1982: 160); Ganev (1984); Beshkov (1993: 372); Beshkov (1998: 239); Nestorova (1998: 141);

34TFM39: Skakavitza Railway Station — Ganev (1982: 160); Ganev (1983); Nestorova (1998: 141) as Zemenski Prolom;

34TFM72: Kresna Gorge — Beshkov (1993: 372); Beshkov (1998: 239); Nestorova (1998: 141); Beshkov (2001: 261);

34TFN82: Vitosha "Shantzata" — Gogov & Loukov (1964: 154); Nestorova (1990: 213), lower forest zone as quoted Gogov & Loukov (1964: 154); Nestorova (1998: 141) as Vitosha;

34TGN03: Chelopechene Village near Sofia — Gogov & Loukov (1964: 154); Nestorova (1998: 141);

34TGN17: Tcherepish — Slivov (1968: 181);

35TKG86: Isperihovo Village, Pazardzhik Region — Ganev & Beshkov (1987: 115); Beshkov (1993: 372); Beshkov (1998: 239); Nestorova (1998: 141);

35TLG61: Kurdzhali — Gogov & Loukov (1964: 154); Nestorova (1998: 141) as Rodopi; Beshkov & Langourov (2004: 591);

35TLG80: Studen Kladenets Village — Beshkov & Langourov (2004: 591);

35TLG91: Bryagovets Village — Beshkov & Langourov (2004: 591);

35TLG91: Strandjevo Village — Beshkov & Langourov (2004: 591);

35TLH22: Karlovo — Gogov (1963: 242);

35TLJ00: Pleven [Kayluka Park] — Beshkov (1992); Beshkov (1993: 372); Beshkov (1998: 239); Nestorova (1998: 141);

35TMG01: The bridge on Arda River near Madjarovo — Beshkov & Langourov (2004: 591);

35TMG05: Simeonovgrad Town (Maritza Railway Station) — Gogov (1963: 242); Tuleshkov (1965: 216);

35TMG11: Arda Hut — Beshkov & Langourov (2004: 591);

35TMH42: Slivno [Sliven Town] —Rebel (1903: 264) — first report for Bulgaria and Europe; Buresch & Tuleshkov (1937: 153-154); Beshkov (1993: 372); Beshkov (1998: 239); Nestorova (1998: 141) as Stara Planina;

35TNH26: Dalgopol Town — Karnoschitzky (1954: 187-187); Beshkov (1993: 372); Beshkov (1998: 239); Nestorova (1998: 141) ;

35TNH26: Krasimir Village near Dalgopol Town — Karnoschitzky (1954: 187-187);

35TNH47: Sindel Railway Station — Karnoschitzky (1954: 187-187);

35TNH78: Asparuhovo [suburb of Varna] — Karnoschitzky (1954: 187-187); Nestorova (1998: 141) as Varna; Beshkov (1993: 372); Beshkov (1998: 239) as Varna;

— Dimitrovgrad — Nestorova (1998: 141) (wrongly quoted report of Tuleshkov (1965: 216) for Simeonovgrad);

— Eastern Rhodopi — Beshkov (1993: 372); Beshkov (1998: 239).

New localities (black circles in Map 1):

34TFL99: Struma Valley, Marena Hill near General Todorov village, 193m, N41°27'02"; E023°18'49", 28.xi.2009, S. Beshkov leg.;

34TFM45: Ossogovo Mts, Piyanetz Ridge, between the border post above Vetren Village and Tchoveka summit, below Golgamata Peshtera Cave, 1180 m, N42°04'03"; E022°46'26", 31.x.2008, S. Beshkov & B. Zlatkov leg.;

34TFM57: Struma valley, Skrinski Prolom Gorge, Pastouh village, 465m, 16.xi.2004, S. Beshkov & D. Vassilev leg.;

34TFM66: Struma Valley, Slatino village, Ladi Restaurant, N42°9'35.40"; E023°2'31.18", 16.xi.2014, S. Beshkov & S. Abadjiev leg.;

34TFM81: SW Pirin Mts, Gradeshka Banja above Gradeshnitza, 340m, N41°42'28"; E023°12'36", 16.xii.2008, S. Beshkov & J. Kaitila leg.;

34TFM82: SW Pirin Mts, Vlahi village, 556m, N41°44'27"; E023°13'46", 15.xii.2008, S. Beshkov, J. Kaitila & D. Vassilev leg.;'

34TFN73: Pozharevo Village near Slivnitza, 600 m, 08.xi.2009, B. Petrov leg.;

34TFN75: Above Beledie Han Village, Kostinbrod district, 757m, N42°53'35.7": E023°09'06.7", 14.xi.2010, S. Beshkov & V. Gashtarov leg.;

34TFN92: Sofia, Sofia Airport, Terminal 2, 550m, 31.x.2009, V. Gashtarov leg.;

34TGL09: S Pirin Mts, The crossroad to Kovachevo Village on the road Katuntzi-Spanchevo villages, 262m, N41°29'31": E023°29'14", 28.xi.2009, S. Beshkov, J. Kaitila, R. Haverinen & K. Nupponen leg.;

34TGN01: Passarel, below the rocks, 21.xi.2000, S. Beshkov & P. Petkov leg.;

35TKG86: Ognyanovo Railway Station near Pazardzhik, S. Beshkov leg.; 19.xii.1984.

35TLF88: Eastern Rhodopi Mts, Kaklitza village graveyard, Kroumovgrad district, 500m, N41°24'29": E025°38'17", 17.xi.2005, S. Beshkov & D. Vassilev leg.;

35TLG89: Stara Zagora town, 07.XII.1999, P. Petkov leg.;

35TLH65: Predbalkan, Kmetovtzi village between Gabrovo Town and Bozhentzite Village, 440m, N42°53'54": E025°23'49", 11.xi.2010, S. Beshkov leg.;

35TNH52: S Black Sea Coast, between Ravda and Nessebar, 5m, 31.XII.1993, S. Beshkov leg.

The record for Serbia

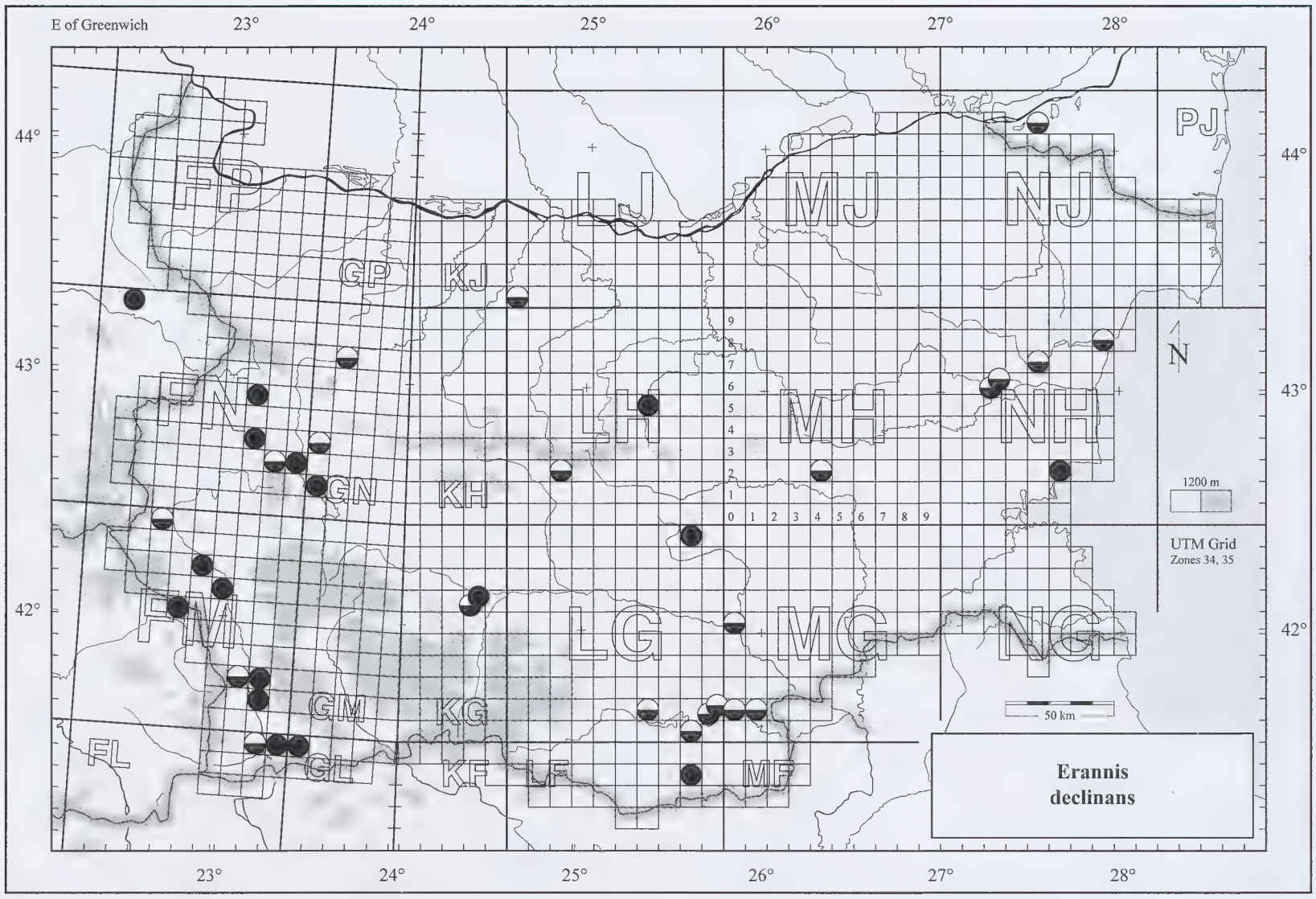
Up to now, Kayluka Park at Pleven was the most north-western locality for this species (Beshkov, 1992), but the distribution in Bulgaria suggests that *Erannis declinans* may occur in Republic of Serbia as well. Not familiar at that time with the paper by Vardikyan (1949) the present author was confident that *Paliurus spina–christi* was its food plant. A place where *Paliurus* is abundant was spotted in July 2014 and at the beginning of November 2014, during ideal weather conditions, was light-trapped. Three light traps with "actinic" and "black light" were deposed in three different

Plate 2. Habitat (collecting locality) of *Erannis declinans* in eastern Serbia, November 2014.

collecting points, situated about hundred metres from each other. In one of the traps a single male specimen of *Erannis declinans* was found (Plate 1b):

> Eastern Serbia, Svrljiske Planine, Rinjska Planina, between Bela Palanka town and Donja Glama village on the road to Babin Kal, near Krstovica, UTM Code: 34TFN19, 583m asl., N43°15'34": E022°21'27", 09.xi.2014, S. Beshkov leg.

The EUNIS Habitat type (http://inpn.mnhn.fr/docs/ref_habitats/EUNIS_trad_francais.pdf) at the collecting locality is "E1.22 Arid subcontinental steppic grassland ([Festucion valesiacae])". Dominant plant species are *Dichanthium ischaemum* (L.) Roberty and *Stipa bromoides* (L.) Dörfl., surrounded by bushes of *Paliurus spina–christi* Mill, *Prunus spinosa* L., *Acer monspessulanum* L. and *Quercus* sp. on a limestone substrate (Plate 2). Synchronic and syntopic lepidopteran species were *Poecilocampa populi* (L., 1758) (abundant, more than 20 females and 4 males), *Colotois pennaria* (L., 1761), *Agriopis bajaria* ([D.& S.], 1775), *Ptilophora plumigera* ([D.& S.], 1775), *Diloba caeruleocephala* (L., 1758), *Allophyes oxyacanthae* (L., 1758), *Agrochola lychnidis* ([D.& S.], 1775), *Anchoscelis helvola* (L., 1758), *Dichonia aeruginea* (Hb., [1808]), *Dasypolia templi* (Thunb., 1792) (abundant, more than 35 specimens from both sexes collected) and *Polymixis rufocincta* (Geyer, 1828). Two more nights of collecting from Bela Palanka to Pirot were managed, but in places without *Paliurus spina–christi* and no more specimens of *Erannis declinans* were found. *Paliurus spina–christi* without any doubt is one of the food plants of larvae, perhaps a favourite one, but they surely are feeding on other trees and bushes.



Map 1. Localities for *Erannis declinans* in Bulgaria and Serbia.

The reasons why *Erannis declinans* has not been previously reported from Serbia perhaps include the following:

- Insufficient active night collecting and very few native collectors;
- The very late flight period (depending on the year and locality) – it is winter species and only males can fly;
- It flies late in the night and often in low temperatures.

Flight period

Based on our own data from Bulgaria and from literature sources, this moth is on the wing from the very end of October (28.x.1966, Tcherepish (Slivov, 1968: 181) to the very beginning of January. The date of 21.iv.1959 for Simeonovgrad town (Maritza Railway Station) by Gogov (1963: 242) is perhaps a *lapsus calami*. Altitudinal distribution is from sea level up to 1180 metres in the Ossogovo Mountains.

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Thalictrum delavayi (Chinese meadow-rue) – a new host plant for *Phytomyza minuscula* Goureau, 1851 (Dip: Agromyzidae)

Sometimes one does not have to travel far to find interesting leaf mines. On 7 September 2015 I saw the distinctive mines of *Phytomyza minuscula* on *Thalictrum delavayi* in the border of our garden in Downham Market, Norfolk.

Having been familiar with these mines from *Aquilegia spp*. I looked up its host plants from the list by Pitkin and Plant on the British leafminers website (*http://www.leafmines.co.uk/html/plants.htm*) and found that it was a leaf miner of *Thalictrum* spp., but the only species listed was *Thalictrum flavum* (Yellow meadow-rue). The Leafminers and Plant Galls of Europe (*http://bladmineerders.nl/index.htm*, accessed 10.ix.2015) gives several species of *Thalictrum* mined by *P. minuscula* but *T. delavayi* is not included in the listing. It would appear that *T. delavayi* is a new host species for *P. minuscula*.

Interestingly, Robbins (1990. *A Provisional Atlas of The Leaf Miners of Warwickshire*) states that even when *Aquilegia* and *Thatlictrum* are present in the same garden, *Thalictrum* was not been mined. In our garden I found the opposite, where *Aquilegia* and *Thalictrum* were immediately adjacent it was only the *Thalictrum* that was mined.

Perhaps it is worth examining the plants in your garden too!

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Hornet Moth *Sesia apiformis* (Cl.) (Lep.: Sesiidae) feeding on willow *Salix*

On the morning of 24 June 2008, I found an adult Hornet Moth *Sesia apiformis*, a species whose larvae normally feed on poplar, resting on the trunk of a willow in my garden in Woodmancote, near Cheltenham, Gloucestershire (O.S. grid reference SO 968277). The willow in question was *Salix acutifolia* Blue Streak, a male clone of the sharp-leafed willow, selected for its violet young stems that are covered with a whitish bloom and for its attractive catkins. In order to obtain a good display of these features I have regularly pollarded the tree, removing about half of the branches in alternate years to encourage fresh growth. I subsequently searched the base of the tree for larval exuviae, but found none.

Plate 1. Mating pair of *Sesia apiformis* (Cl.) Hornet Moth, on *Salix acutifolia*. Woodmancote, Gloucestershire, 24.vi.2008.

Another Hornet Moth was present on the same tree on 2 July 2011 and yet another a few feet from the tree on 13 June 2014. As before, however, I was unable to find empty pupal cases on the trunk of the tree.

The willow began to show signs of distress during 2014 and by the end of the year it was clearly dead. I began to make plans to have the dead tree removed and its stump ground out, with a view to obtaining and planting a replacement. Fortunately, I had not already done so, as at about 9 am on 24 June 2015 I found a mating pair of Hornet Moths on the tree (Plate 1). About two hours later a single Hornet Moth was present on the tree; this may have been one of the pair or possibly another individual, as on

Plate 2. Pupal exuviae of *Sesia apiformis* (Cl.) Hornet Moth in trink of *Salix acutifolia*. Woodmancote, Gloucestershire, 24.vi.2008.

this occasion I was successful in finding three exuviae (Plate 2). By 28 June, a further four exuviae were present at the base of the trunk, though I did not see any more of the moths.

There seem to be no previous reports of the Hornet Moth using *Salix* rather than *Populus* in Britain, though in North America, where it was introduced in the 19th Century, it is said to "attack" both poplar and willow and to have been recorded also from lime *Tilia* sp., birch *Betula* sp. and ash *Fraxinus* sp. It is also of interest that the Hornet Moths which emerged from my willow in June of this year had completed their larval period within a dead tree.

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Systematic predation of Emperor Moth *Saturnia pavonia* (L.) (Lep.: Saturniidae) cocoons

On 16 September 2015, in Heather *Calluna vulgaris* moorland at Culvie Hill (O.S. grid reference NJ 5755) in Banffshire, I found two predated cocoons of Emperor Moth *Saturnia pavonia*. They were lying close together on the flat top of a large boulder about 1 metre square that protruded from the heather. Both had been torn open and

emptied of their contents. The predator had apparently used the rock as a convenient work surface.

Curious as to the identity of the culprit, I visited the site again five days later. The two empty cocoons were still there, but no more had been added. I then checked similar exposed rocks on the hillside and found another ten cocoons on a further six rocks, scattered over an area of about five hectares. All 12 cocoons had been cleanly removed from the heather or other vegetation, then presumably carried to the nearest suitable rock. All had been opened in a similar way, with a single V-shaped tear midway down one side, and the contents completely removed. No other prey items or remains were present on the rocks. No predated cocoons were found in the heather itself, where they would have been conspicuous.

It is unlikely that a mammal would transport the cocoons some distance to a rock before dealing with them. Instead, this behaviour suggests an avian predator. Indeed, a fresh bird dropping was found on two of the rocks, with similar recent droppings on all the others. They were far too large to be from a small passerine such as a pipit *Anthus* or chat *Saxicola*. On both visits, the only bird seen or heard in the area was a juvenile Common Buzzard *Buteo buteo*, constantly calling for food. This raptor has an exceptionally wide and varied diet that includes moth caterpillars and other insects, especially in autumn (Cramp, S. (ed.), 1980. *The Birds of the Western Palearctic* vol. II, OUP). Although not present on either occasion, Kestrel *Falco tinnunculus* has a similar diet and might also be a candidate. However, both raptors hunt by observing movement and are unlikely to be attracted by an inanimate object such as a cocoon. Gulls *Larus*, known predators of large moths on some moors (Kettlewell, B., 1973. *The Evolution of Melanism*. Clarendon Press, Oxford) have never been seen working this or neighbouring sites. The date rules out Cuckoo *Cuculus canorus*. That leaves corvids, particularly Carrion Crow *Corvus corone*. Being an intelligent and inquisitive bird it is well capable of such behaviour and must be the most likely culprit. On many previous visits a pair had been present at the site and were sometimes seen perching on the rocks in question.

Despite having worked the area since 1990, I have never before encountered similar predation of Emperor Moth cocoons. The consistency of the *modus operandi* suggests learned behaviour by an individual predator, in a year when these cocoons were more numerous than usual and therefore worth targeting. Even without deliberate searching I found three on my visits, concealed as usual in tufts of heather. All were undamaged, but fearing for their safety I took them into protective custody and will release the resulting moths next spring.

Whilst it is frustrating not to be able to identify the predator with certainty, there seems to be little in the literature about predation (avian or otherwise) of Emperor Moth cocoons, so perhaps this instance is worth recording.

I thank Nigel Richards for his ornithological input and my neighbours R. & S. Runcie for allowing me access to their land.

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Scythris empetrella Karsholt & Nielsen (Lep.: Scythrididae): larvae in October 2015

In mid October 2015 I had a week's family holiday in the New Forest, Hampshire. It was not intended as an entomological break and where we stayed was not chosen by me. It happened to be Lyndhurst, and produced an interesting record.

On 3 May 2000 Mark Parsons and Dave Green had found larvae, and reared moths, of *Scythris empetrella* Karsholt & Nielsen at a disused sand-pit near The Bench, just outside Lyndhurst (Parsons, Green & Sterling, 2001. *Entomologist's Gazette* **52**: 149–150). The species has recently been accorded pRDB2 status by Davis (2012. *A Review of the Status of Microlepidoptera in Britain*: 21), denoting that it is only known from between six – ten 10km squares in Great Britain. It has been recorded from just five sites in England and two in north-east Scotland, and so has a very disjunct distribution. In England these are: Studland, Dorset (VC 9), Lyndhurst (VC 11), Hengistbury Head Nature Reserve, Christchurch and Sopley Common Nature Reserve, Hurn, both these localities are in the modern administrative county of Dorset but are in the vice-county of South Hampshire (VC 11), and Pirbright Ranges, Surrey (VC 17). In Scotland it occurs commonly at Findhorn Dunes near Forres, Moray (VC 95) and very locally at Cuthill Links near Dornoch, East Sutherland (VC 107). The species only inhabits sandy areas where the larva feeds on leaves of Crowberry *Empetrum nigrum* L., Heather *Calluna vulgaris* (L.) Hull and Bell Heather *Erica cinerea* L. from long, narrow, sand-covered tubes.

On 14 October 2015 in the course of a walk over nearby heathland I went to the sand-pit near The Bench. This is immediately to the north of the B3056 Beaulieu Road. The site is a comparatively small area of loose yellow sand with *Erica cinerea*, Gorse *Ulex europaeus* L. and grass around the edges, and, apparently, unlike anywhere else in the New Forest. The reason for the visit was just to see what the habitat looked like; I certainly did not expect to find any evidence of *Scythris empetrella*. Thus I was very surprised when I noticed several typical larval tubes amongst *Erica cinerea* on the edge of the sand-pit. All the tubes had one end attached to the foodplant and the other buried in the sand. Close examination of a few of them against the light showed that each was occupied by a larva about 7 mm long. In Great Britain the larval period is reported as being from April to May, with adults from June to July (Bengtsson *in* Emmet & Langmaid, 2002. *The Moths and Butterflies of Great Britain and Ireland* **4** (1): 288–289), but Beavan & Heckford (2013. *Entomologist's Rec. J. Var.* **125**: 77–78) record finding larvae on *Empetrum nigrum*, *Calluna vulgaris* and *Erica cinerea* at Findhorn Dunes on 14 August 2012. They discuss whether the larvae would have remained in that stage until the following April/May or whether the species is bivoltine there with moths emerging in the autumn. They refer to two fairly recent articles in this journal about the voltinism of *Scythris potentillella* (Zeller) and *S. crassiuscula* (Herrich-Schäffer). Adult *S. potentillella* were recorded from September to 12 October 2005 and on 10 June, 1 July and 23 September 2006 at Croxley Common Moor, Hertfordshire (VC 20) (Murray, 2007. *Entomologist's Rec. J. Var.* **119**: 71). Adult *S.*

crassiuscula were noted at several localities in East and West Gloucestershire (VC 33 and VC 34) from 19 May to 29 September during 2003–2011. There was just one record for the period from late July to mid August, on 1 August 2010, but there were 11 records from late August to late September in 2004, 2006, 2009, 2010 and 2011, with adults in large numbers on some occasions, as well as five adults being observed on a yellow flowerhead of a plant in in the Asteraceae on 29 September 2011 (Meredith, 2012. *Entomologist's Rec. J. Var.* **124**: 167–169). From this it would appear that, at least at Croxley Common Moor, Hertfordshire and in East and West Gloucestershire, these species are bivoltine when hitherto they were believed to be univoltine in Great Britain.

The larvae found near The Bench in mid October 2015 will presumably not pupate until the following spring. If so then this suggests that larvae recorded in April and May will have commenced feeding in the autumn. Does this mean that such larvae are the result of ova laid in June or July or might there be a second generation of adults in, say, September? The same question asked before by Beavan & Heckford (*loc. cit.*) about the voltinism of this species is thus raised again.

Finally, it is worth noting that *Scythris empetrella* was described new to science by Stephens (1834. *Illustrations of British Entomology*. Haustellata **4**: 274), under the name *Glyphipteryx variella*, from material taken by the Reverend G. T. Rudd at a 'Sand-pit near Lyndhurst, on the Bewley-road, June 1834.' When Mark Parsons and Dave Green found larvae in early May 2000 this appears to have been the first record of the species from the New Forest since Rudd's. Further, it probably represented the rediscovery of the type locality (Parsons, Green & Sterling, *loc. cit.*). If this sand-pit is indeed the type locality then it is of exceptional interest and historic importance as there must few type localities of such age that can still be identified. There is a Forestry Commission public car park close to it and during my visit children were enjoying playing on the sand. No doubt it is quite a popular venue. Some disturbance of the area immediately surrounding the sand-pit may be helpful to the species by breaking up compacted soil to reveal the sand beneath, but too much disturbance may lead to a reduction of the foodplant and possible decline of the species. It is to be hoped that conditions remain suitable for the continued existence of *Scythris empetrella* at this site.

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Clepsis dumicolana (Zeller) (Lep.: Tortricidae) in Buckinghamshire

In late March 2015 I sent a photograph of a well-marked Tortrix moth to Martin Albertini (Buckinghamshire County Moth Recorder). I had captured the moth in the previous year and had struggled to identify it. The moth died and I put it to one side. On clearing out various pots in the autumn I came across it again and, as its identification was still uncertain, I took a record photograph before disposing of it.

The identification of the moth kept nagging away at me and during an exchange of e-mails with Martin regarding the records I had submitted in 2014 I included the photograph with a confession that I could not place it.

Martin also could not place it and as I had recently returned from Colombia wondered whether it was perhaps not British. However, on 11 May Martin got back in touch to suggest that the moth might be *Clepsis dumicolana*. This was after having seen a picture that Colin Plant had circulated with a note for recorders in Herts and Middlesex to look out for the species. Martin sent my photograph to both Colin and John Langmaid who confirmed the identity of the moth.

I checked my records and discovered the moth had been captured at my house in Longwick (O.S. grid reference SP 7805), near Princes Risborough on 21 May 2014. Martin confirmed that the record occurred only six days after the first British record which was made in Central London on 15 May 2014 (see Pires, 2014. *Ent. Rec.* **126**: 121-129).

I checked the Ivy *Hedera helix* growing on the wall of the house and was delighted when, on 24 May 2015, two specimens of *C. dumicolana* were spotted flying around in the afternoon sunshine. I immediately alerted Martin to the fact that the moths were clearly in residence.

Over the forthcoming days the moths were regularly seen in sunshine including a high count of 24 at once on 4 June. The moths would rest on Ivy leaves, brickwork or windows, but became harder to see in wet and windy conditions. The site is a typical semi-detached house with Ivy growing up the brick walls and down-pipe. The Ivy has been present for many years. Perhaps of interest is that the corner location faces variously between east and east-by-north-east, which I believe is a common feature with the site from which the first British specimen was discovered.

I would like to thank Martin for identifying the original record and Colin Plant and John Langmaid for confirmation.

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CORRIGENDA

The Editor has been notified of the following important corrections to the current volume:

pp. 185 & 186: in the title of the paper, twice in the Abstract and twice within the text, replace *Deplanqueia* with *Delplanqueia*.

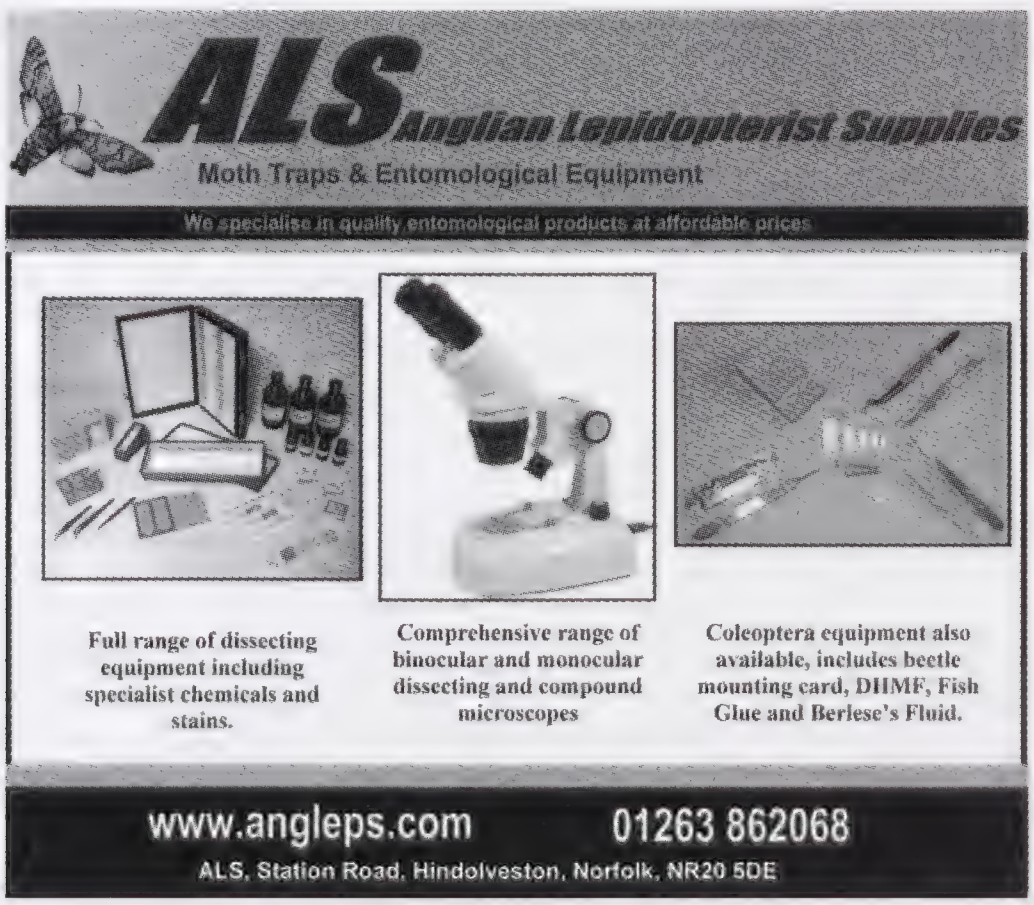
SUBSCRIPTION RENEWALS FOR 2016

The subscription rate remains unaltered! The subscription reminder/renewal form was sent with the last issue of the journal in September. It would help us immensely if you could pay promptly at any time from now onwards. Please note that payment should be addressed to "Subscriptions, PO Box 8774, SW7 5ZG". Please don't send them to the Editor – I don't deal with this side of things and it costs me a stamp to forward them.

If you do not have a renewal form, you can simply send a cheque for the appropriate rate (£25 for individuals within the UK; for others, check at *www.entrecord.com*), but please make sure that (a) you make it clear that it is a renewal for the *Entomologist's Record* and (b) that you include your full name and postal address so we can process your renewal. We will not reply unless you specifically ask for a receipt, in which case we would greatly appreciate you enclosing a stamped and self-addressed envelope.

During 2015 we published the usual annual reviews of both immigrant Lepidoptera and of micro-moths as well as a total of 36 articles on macro-moths (including butterflies) and 18 on micros; a further 14 items on insects other than moths was also included. We have included 4 articles on foreign macros and 3 on foreign micros. As Editor, I know that many readers are interested to learn what our European friends are up to. This has particular relevance in view of the many new species added to the British fauna in the last ten to fifteen years and even if some of the published species do not arrive in Britain a broader understanding of the European situation is likely to help British researchers to interpret their discoveries.

Also, unfortunately, without these (selected) contributions from Europe we would be staring at blank pages and so if you are one of those who thinks there is too much foreign material included then why not write something yourself! Regrettably, people are increasingly of the view that putting important records on web sites, or even worse – bloggs, is sufficient. It is not! That is not just the dinosaur within me that is speaking! With the exception of a very few sites (mostly accessed by subscription) that are dedicated to publishing peer-reviewed papers on-line and to retaining the pages, unaltered, in perpetuity, **web sites are not permanent**. There is no objection to material being posted on-line, but the more important data should be formally published, after peer-review, in the traditional manner. For Lepidoptera, that means either this journal or with our good friends at *Entomologist's Gazette*.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